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Volume 18 April 1949 Number 4

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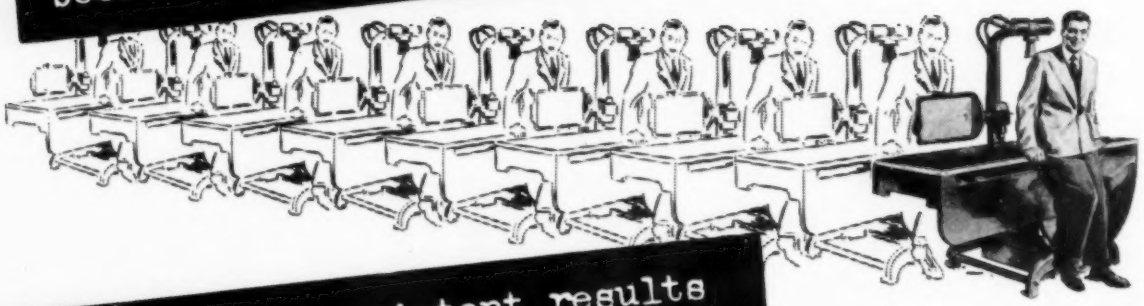

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This magazine is published to promote sound thought upon and concerning industrial medicine and traumatic surgery. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

Volume 18 APRIL 1949 *Number 4*

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THE Thirty-Fourth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, together with the 1949 INDUSTRIAL HEALTH CONFERENCE, will be held in Detroit, Michigan, April 2-8, 1949, with headquarters at the Book-Cadillac and Statler Hotels, as follows:

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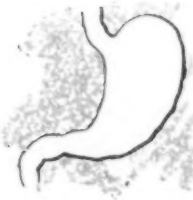

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NEWS

DR. FRANK L. RECTOR, of Evanston, Illinois, has been awarded the Navy Cross Medal for his service as medical officer with an infantry battalion in the Saipan and the Tinian engagements in the recent war. The award was made December 24 at the Swan Island Naval Base, Portland, Oregon. The previously awarded Silver Star Medal was recalled by the Navy and in its place the Navy Cross Medal was awarded.

ANNOUNCEMENT is made of the promotion of EDWARD J. DEHNE, Major, Medical Corps, to the grade of Lt. Colonel. LT. COLONEL DEHNE is Chief of the Medicine Section, Army Industrial Hygiene Laboratory of the Office of The Surgeon General, located at the Army Chemical Center, Maryland. He is occupied in activities of the Army's Industrial Health Program.

DR. RAYMOND E. MASTERS has been appointed Plant Medical Director of the new Atomic Power Division of the Westinghouse Electric Corporation, effective March 1, 1949. DR. MASTERS is a graduate of the School of Medicine, University of Pittsburgh, 1935. In 1940 he joined the medical staff of the Westinghouse Electric Corporation at the East Pittsburgh Division. He was on military leave from the Corporation with the U. S. Army Medical Corps from 1941 to 1946, when he returned to the East Pittsburgh Division. From 1947 to 1948 he was assigned to the Atomic Energy Commission for duty at the School of Medicine and Dentistry, University of Rochester. He returned to the East Pittsburgh Division from where he transfers to his new assignment.

Forensic Science

IN January, 1948, a group of forensic scientists met, at the invitation of Dr. R. B. H. Gradwohl, in St. Louis, Missouri, to consider the formation of a society devoted to the interests of forensic science. The gathering included medicolegal experts, pathologists, chemists, toxicologists, psychiatrists and those connected with police science laboratories. After a successful meeting, a second convocation consist-

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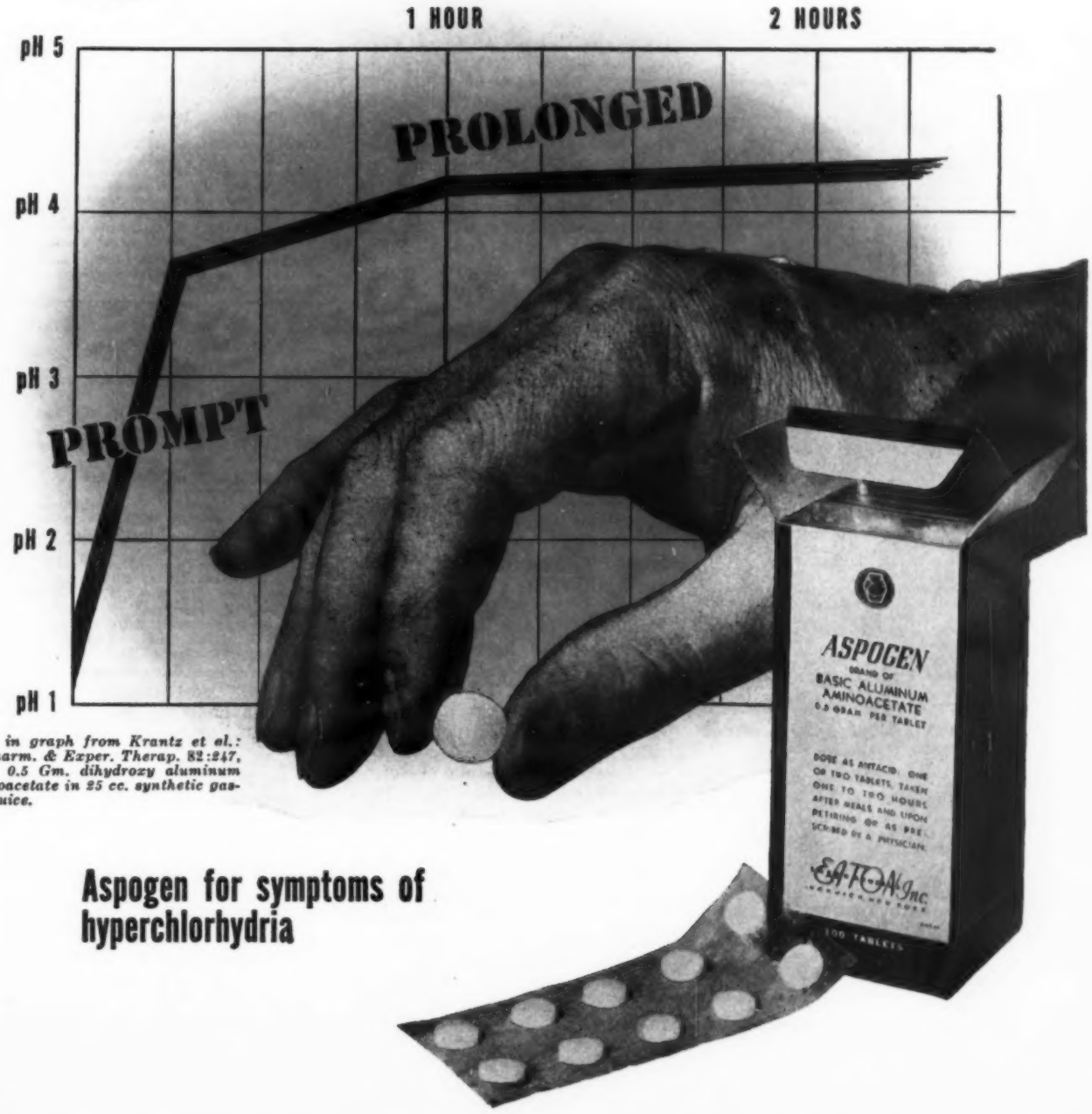
*Holbert, J. M., Noble, N. and Grote, I. W.: *A Study of Antacid Buffers. II. Prolonged Neutralization*, J. Am. Pharm. A. (Sci. Ed.) 37:292, 1948.



Data in graph from Krantz et al.: J. Pharm. & Exper. Therap. 82:247, 1944. 0.5 Gm. dihydroxy aluminum aminoacetate in 25 cc. synthetic gastric juice.

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ing of a Steering Committee was held in New York in October, 1948, at which time the projected plans were given impetus and support. Since that time Dr. Gradwohl has appointed committees which are preparing the way for an organizational meeting contemplated for spring or summer of 1949. Interested parties may contact Dr. Gradwohl, 3514 Lucas Avenue, St. Louis, Missouri, or Professor Ralph F. Turner, Michigan State College, East Lansing, Michigan.

Physical Medicine

THE American Congress of Physical Medicine will hold its twenty-seventh annual scientific and clinical session September 6, 7, 8, 9 and 10, 1949, inclusive, at the Netherland Plaza Hotel, Cincinnati, Ohio. Scientific and clinical sessions will be given on the days of September 6, 7, 8, 9 and 10, 1949. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 6, 7, 9 and 9. These courses will be offered in two groups. One set of 10 lectures will consist of basic subjects, and attendance will be limited to physicians. One set of 10 lectures will be more general in character and will be open to physicians as well as to physical therapy technicians who are registered with the American Registry of Physical Therapy Technicians. Full information may be obtained by writing to the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

What Right?

PERHAPS you have listened to talks by Henry J. Taylor who is presented by General Motors on Monday evenings. In the December 27, 1948, broadcast he said: "Now, I'm no Doctor. But as I see the principles involved it goes even deeper than Doctors. A Doctor is an American citizen. His individual rights are no less important because he is outnumbered. This republic is obligated to protect the minority. It is fully obligated to protect the minority as it is to respect the majority. A Doctor may work a lifetime to secure independence as may any enterprise. What legal right has Mr. Ewing or

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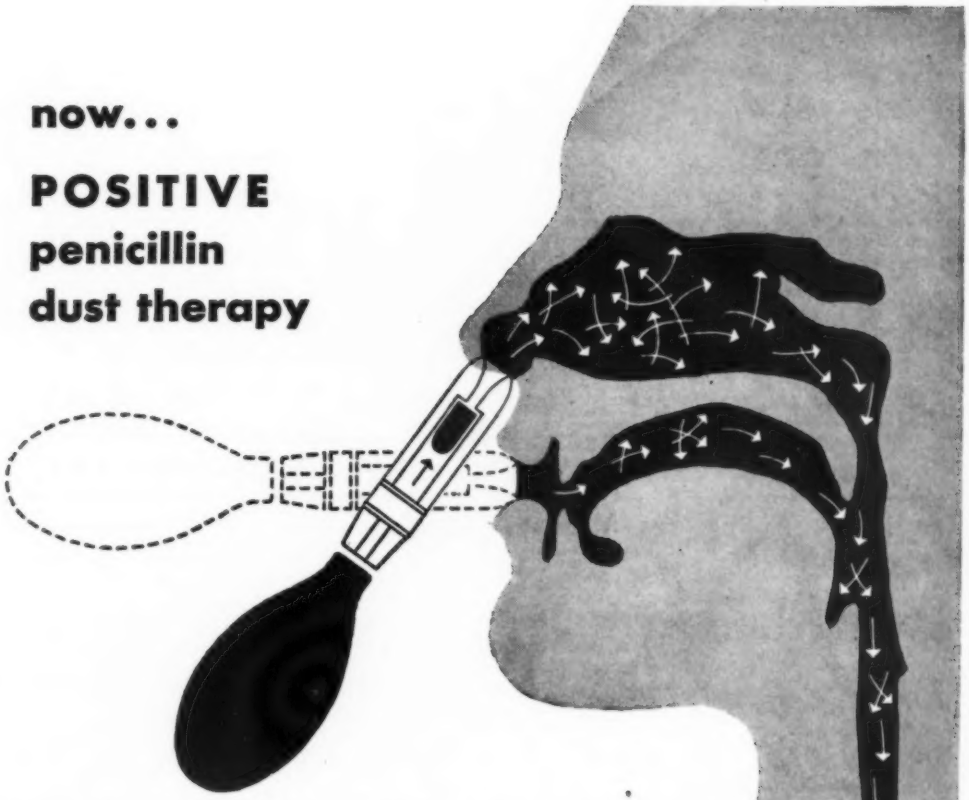

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61st Annual Meeting, June 30—July 2, 1949, at the Drake Hotel, Chicago

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American Association for the Advancement of Science, 1515 Massachusetts Ave. N.W. Washington, 5, D. C.

American Association of Industrial Dentists, 4604 South helsea Lane, Bethesda 14, Maryland. V. J. FORNEY, D.D.S., Secretary-Treasurer.
April 6-7, 1949; Detroit.

American Association of Industrial Nurses, 654 Madison Ave., New York 21, N. Y. GLADYS L. DUNDORE, R.N., Executive Secretary.
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American Association of Industrial Physicians & Surgeons, 28 East Jackson Blvd., Chicago 4, Ill. EDWARD C. HOLMBLAD, M.D., Managing Director and Treasurer.
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American Association of Railway Surgeons, 547 West Jackson Blvd., Chicago 6, Ill. CHESTER C. GUY, M.D., Secretary.
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American Chemical Society, 1155 Sixteenth St. N.W., Washington 6, D. C. A. H. EMERY, Secretary.

American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. E. R. LOVELAND, Secretary.

American College of Surgeons, 40 East Erie St., Chicago 11, Ill.

American Conference of Governmental Industrial Hygienists, U. S. Public Health Service, Washington, D. C. J. J. BLOOMFIELD, Secy-Treas.
April 2-5, 1949; Detroit.

American Industrial Hygiene Association, 4400 Fifth Ave., Pittsburgh 13, Pa. HENRY F. SMYTH, JR., Executive Secy.
April 5-7, 1949; Detroit.

American Medical Association, Council on Industrial Health, 535 North Dearborn St., Chicago 10, Ill. CARL M. PETERSON, M.D., Secretary.

anybody else to tell a Doctor where he will work, in what community or why he will practice medicine, how much or how little he is to learn, what he is to charge for his talents, whom he is to treat, and where he is to treat them?"

Committee Appointments

DR. A. G. KAMMER, Medical Director, Carbide & Carbon Chemicals Corporation, S. Charleston, West Virginia, and DR. CARL M. PETERSON, Secretary, Council on Industrial Health, American Medical Association, Chicago, have been appointed to INDUSTRIAL HYGIENE FOUNDATION'S Medical Committee, and DR. ANNA M. BAETJER, Assistant Professor, Department of Physiological Hygiene, Johns Hopkins University, Baltimore, has been appointed to the Foundation's Chemical and Toxicological Committee.

PAUL E. LOUDENSLAGER, Medical Director of Campbell Soup Company, Camden, New Jersey, died December 7, 1948. He received his M.D. degree at the University of Pennsylvania School of Medicine, 1922, interned at Laukenau Hospital, Philadelphia, 1922-24, and did post-graduate work at the University of Pennsylvania 1927-28. He was engaged in part-time industrial medicine and surgery, 1928-30, and devoted full time to industrial medical practice, 1930-48. He died, at 54, from carcinoma of the stomach. He was a member of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.

American Medical Association, 535 North Dearborn St., Chicago 10, Ill. GEORGE F. LULL, M.D., Secretary & General Manager.

American Public Health Association, 1790 Broadway, New York 19, N. Y. REGINALD M. ATWATER, M.D., Executive Secretary.
November 8-12, 1949; Boston.

Association for the Surgery of Trauma.

Canadian Public Health Association, Vancouver, B. C., Canada.

Council on Industrial Health, American Medical Association; Secretary: CARL M. PETERSON, M.D., 535 N. Dearborn St., Chicago 10. Congress on Industrial Health, January 18-19, Drake Hotel, Chicago.

Industrial Hygiene Foundation of America, 4400 Fifth Ave., Pittsburgh 13, Pa. JOHN F. MCMAHON, Managing Director.
November 17-19; Pittsburgh.

International Association of Industrial Accident Boards & Commissions, MARSHALL DAWSON, U. S. Dept. of Labor, Washington, D. C., Secy-Treas.
September 12-18; New York.

Lead Industries Association, 420 Lexington Ave., New York 17, N. Y. ROBERT L. ZIEGFELD, Secretary-Treasurer.
November 15-16; Chicago.

National Council on Rehabilitation; Secretary-Treasurer: MR. HOLLAND HUDSON, 1790 Broadway, New York 19.

National Metal Congress, Philadelphia.
October 25-28; Philadelphia.

National Rehabilitation Association, 411-7th Ave., Nashville 4, Tenn. LOUIS R. SCHUBERT.
December 6-10, 1948; Madison, Wis.

National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. NED H. DEARBORN, President; CARMEN FISH, Secretary.
October 18-22; Chicago.

National Tuberculosis Association, 1790 Broadway, New York 19, N. Y. H. STUART WILLIS, Secretary.

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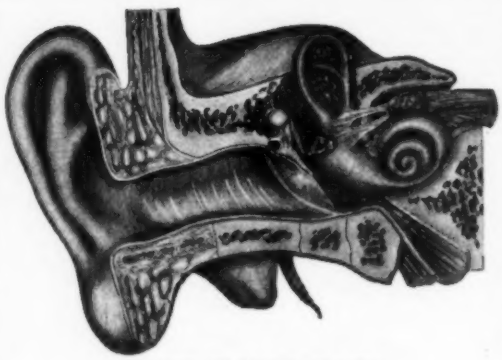

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Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32-241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592.

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8

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The biologic importance of complete protein in the daily diet takes on new significance in the light of recent research on the influence of timing upon protein utilization.[1,2]

Protein-depleted animals, maintained on an otherwise adequate diet, rapidly regained weight when fed their complete ration of the ten essential amino acids. When, however, these ten amino acids were not provided simultaneously—five were given at one feeding and the other five in a feeding two hours later—recovery did not occur.

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[1]Cannon, P. R.; Steffee, C. H.; Frazier, L. J.; Rowley, D. A., and Stepto, R.C.: The Influence of Time of Ingestion of Essential Amino Acids upon Utilization in Tissue Synthesis, Fed. Proc. 6:390, 1947.

[2]Geiger, E.: The Role of the Time Factor in Feeding Supplementary Proteins, J. Nutrition 36:813 (Dec. 10) 1948.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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Sopronol is physiologic: it utilizes the fatty acids found in human sweat (propionates and caprylates) to combat fungi just as nature does.
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THIS pH6 CLEANSER SURE TAKES THE STING OUT OF WASHING UP!
IT SURE DOES! MY HANDS HAVEN'T LOOKED AND FELT THIS GOOD SINCE I STARTED WORKING HERE.

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Small, easy-to-swallow Mosidal tablets are now available at your pharmacy—on prescription only—in bottles of 25 and 100. Write for professional literature. Abbott Laboratories, North Chicago, Ill.

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*Noble, R. L. (1946), Treatment of Experimental Motion Sickness in Humans, Canadian J. Research, Section E, 24:10.

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1. Scudi, J. V., and Duca, C. J.: J. Urol. (Feb.) 1949. 2. Carroll, G., and Allen, H. N.: J. Urol. 55: 674 (1946). 3. Butt, A. J.: J. Florida M. A. 35: 430 (1949).

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for an effective and uncomplicated regimen

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for varicose veins

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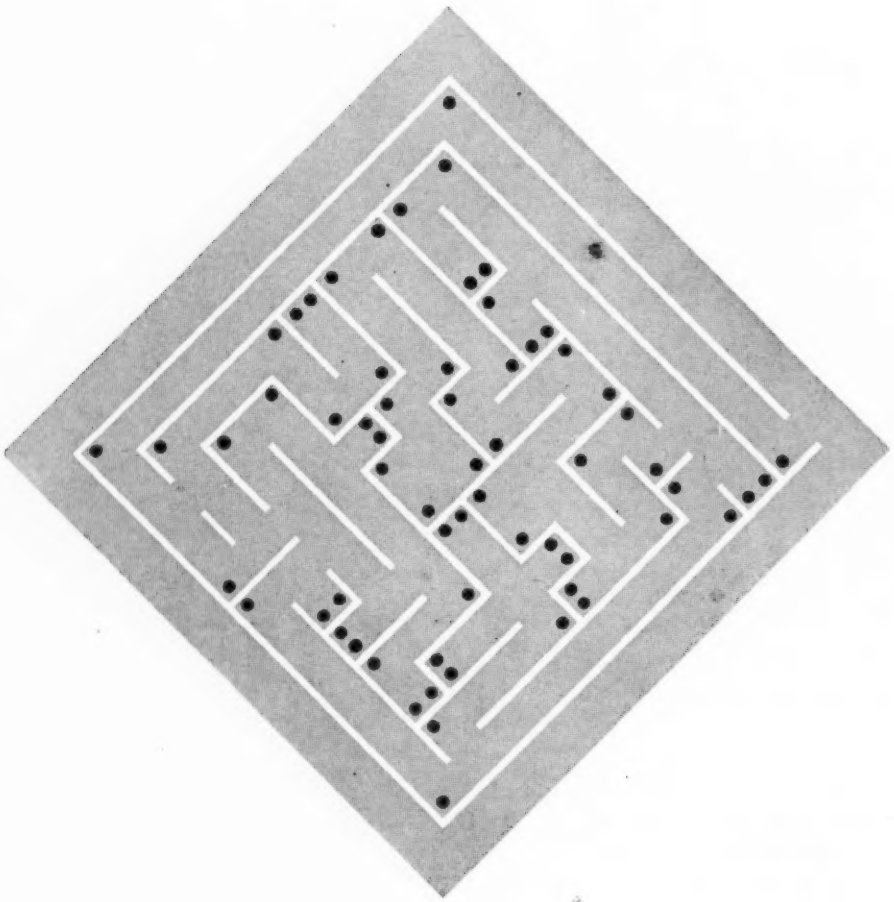

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The Cornell Index Used as an Appraisal of Personality by an Industrial Health Service
— I. The Total Score —

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EMPHASIS is laid today on the psychobiological approach in medicine so that one studies the whole man. One tries to undertake diagnosis in the light of a unified thinking that does not disintegrate in the physical cosmos of the patient into fragmentary chunks, each representing a medical specialty. Industrial physicians have attempted to maintain this wholeness of man, particularly when conducting the preplacement physical examination. Being at the work scene eight hours daily with a group of employees, one realizes soon that in order to aid a worker in adjusting to his occupational environment, one's knowledge of him must go beyond a familiarity with his physical status. This knowledge must adventure beyond the soma, and some comprehension of an employee's personality pattern is necessary to effectuate good job placement. In addition, insight into the particular behavioral scheme is necessary to bring about the desirable ultimate in industrial health, specifically physician-employee rapport.

To accomplish this appraisal of the person's reactions to situations of living, an approach is needed that quickly, efficiently, and somewhat without fanfare will summate this information. Prolonged interviews by the Medical Director are not feasible with all new employees, and in view of the paucity of psychiatrists in industry, and the infrequent association of psychologists with the industrial health service, a screening device is necessary. For the past two years, the Cornell Index,* a test in questionnaire form that appraises personality by a measure of neurotic tendency (in one or another of its current forms) has been employed with the personnel of the Laboratory as an adjunct in the pre-placement physical appraisal procedures, and as a survey instrument to test those workers who had been with the installation prior to the institution of the Mental Hygiene Program. The Cornell Index has proved itself to be a valuable springboard from which one can begin the detection or study of neurotic illness.

Although the Index was used in induction stations and certain military establishments during World War II, it has seen rather limited use in industry. It is believed to be a desirable spotlighting implement for inclusion among the diagnostic undertakings of industrial medicine. A study has been made of 2565 completed Cornell Index forms, and whereas the total scores alone will be considered in this writing (Part I), correlations with other variables will be presented at later dates.

Definition and Development

IN 1944, Weider, Mittelmann, Wechsler and Wolff[1] reported the first use of this test form which was developed to "screen" out the borderline and proved inadequates before induction, so that the rapidly increasing number of psychoneuroses and psychosomatic disturbances might be lessened in the armed services. Such a screening was indicated through the necessity of avoiding induction of individuals who would destroy the morale of the fighting forces and who would cause irreparable damage to themselves.

Although the Index has progressed through several form changes, initially it consisted of three tests. The first sought information relative to the subject's interest range, work preferences, and his acceptance of the male pattern. The second tested self-confidence, self-esteem and decisiveness through the subject's estimate of his ability to manage specific situations. The last was a questionnaire which was fundamentally a neuro-psychiatric and psychosomatic inventory of symptoms indicative of maladjustment. Included in the third were so-called "stop questions" such as "15. Did you ever have a fit or convulsions?" These were so designated, because "any selectee who exhibited such a major symptom must be stopped for more intensive appraisal." All test items underwent validation prior to adoption, and of seven series conducted among varying groups, the results were quite consistent. The test was given to 4355 individuals and, of all men rejected by various psychiatrists or discharged from the service because of psychiatric reasons, 86% were "screened" by the test.

A word as to details of the original form—the form was self-administered and could be

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completed in 15 minutes and scored in two minutes by anyone with a high school education. The equivalent of a seventh grade elementary education was essential for an adequate understanding of the test items. Seventy per cent of the Negro population studied in certain parts of the south could not complete the Index. The authors concluded in this initial presentation that the Index was effective in detecting the presence of anxiety states, hypochondriasis, asocial trends, convulsive disorders, migraine, asthma, peptic ulcer, and allied syndromes, but was less effective in "screening" such entities as hysterical palsies, the prepsychotic and early psychotic states, and the obsessive states.

In 1944, also, a survey was made of the incidence of neuropsychiatric and psychosomatic disorders among unselected admissions to medical, orthopedic, and surgical services of military hospitals by Weider, Mittelmann, Wechsler, Brodman and Wolff.[2] The Index detected 90% of severe neuroses, 77% of moderate neuroses, and identified 8% of ostensibly healthy persons, as confirmed by psychiatric interview.

The following year, 1945, Weider, Brodman, Mittelmann, Wechsler and Wolff[3] discussed an adaptation of the Index for use with persons who had been in the military service for at least a month. They aimed at (1) designing for the armed forces a quick, reliable method for securing important facts of the neuropsychiatric history, and (2) devising a simple method of scoring these items, which would separate those persons with serious personality problems from the rest of the population. Of the 92 questions, the groupings were as follows: (a) three questions—introductory and neutral; (b) 14 questions—defects in adjustment to military groups, expressed as feelings of fear and inadequacy; (c) 10 questions—pathologic mood reactions, especially anxiety and depression; (d) three questions—neurocirculatory psychosomatic symptoms; (e) seven questions—pathologic startle reactions; (f) 12 questions—variety of other psychosomatic symptoms; (g) 14 questions—hypochondriasis and asthenia; (h) 11 questions—gastro-intestinal psychosomatic symptoms; (i) five questions—excessive sensitivity and pathologic suspiciousness; (j) 13 questions—symptoms of troublesome psychopathy. This form was completed in 10 minutes and scored in one. Among the significant questions were included 18 "stop questions," and the scoring level of 13 was believed to detect the mildly psychoneurotic. A level of 23 segregated those with more severe psychosomatic disturbances. Of study groups selected, the Index "screened" (scores of 23 and over) 0.9% of a "normal" group, 13% of a "mild" psychoneurosis group, 78% of a "moderately severe" psychoneurosis group, and 92% of a "severe" psychoneurosis group. Weider *et al* concluded that 98% of severe psychoneurotics were detected and 3.5% of ostensibly healthy persons were found to have poor scores on interview validation.

Warner and Gallico[4] described the use of the Service Index, among 1300 Naval hospital patients of various types, which was administered both singly and in groups. They believed that only an insignificant number were completed with an intent to falsify. The differentiation was good between those without personality disturbance and those with psychiatric complaints of a significant degree. The separation of the individuals with mild disturbances from those with severe defects was not accomplished with clarity by the test, the authors concluded, but they thought that the procedure was somewhat helpful in this direction.

The first industrial application of this test was described during the same year (1945) by Mittelmann, Weider, Vonachen, Kronenberg, Weider, Brodman and Wolff[5] when its use at the Caterpillar Tractor Company was presented. Of 279 subjects, 213 were revealed to be "normal," showing insignificant personality disturbances only. Moderately severe, or severe, disturbances were detected in 66. The scoring level was set at 15 significant answers, or one stop question. The Index "screened" 73% of those with moderately severe and severe disturbances, and 8% of the ostensibly healthy group. On validation by psychiatric interviews, it was learned that the Index differentiated significantly between individuals with and without personality defects. Both the Cornell Index and the Cornell Word Form were used. The use of this form in the same industry was discussed later by Vonachen, Mittelmann, Kronenberg, Weider and Wolff.[6]

In 1946, further details of the Indices and their uses were given. Mittelmann and Brodman[7] described the Cornell Word Form which consisted of a list of stimulus words, next to each of which were two other words. The subject was asked to choose the one he believed to go better with the stimulus word. There were choices obvious in their implication such as SLEEP—comfort, restless. Others were not so obvious: MOTHER—mine, woman. The authors believed that the differentiating value of these items was not so high as in the direct test, but on a total score basis significant quantitative differentiation could be made between normals and those with psychiatric disturbances. The results obtained through the use of the Indices and the Word Form were offered by Weider and Wechsler,[8] and Wolff[9] in outlining the applications of the procedures, and they warned that they were not recommended as criteria by which an employee was to be hired or discharged. Their use in worker placement, however, was acknowledged.

Harris,[10] in the same year, discussed the completion of the forms by 9000 persons in a Navy Yard, including both civilian and Navy personnel, and agreed with the authors of the tests that many individuals who were ill would not be detected by the use of the Index alone, but those who were detected, *were* ill. He believed that a scoring level of 15 could be used, in that

those scoring under that number could readily be accepted for employment. Eight illustrative case studies were outlined, and it was concluded that the "Use of the Cornell Selectee Index is an aid to the psychiatrist in forming a tentative, but usually accurate, opinion in a short space of time," and that "obviously, it is not a substitute for a complete psychiatric examination, in itself."

Weinstock and Watson[11] have taken a less optimistic view of the value of the Index, in believing that the total score of the Index contributed almost nothing to identification of men discharged for psychiatric disorders, and that the "stop" questions, although somewhat more valuable, offered little additional identifying aid. They suggested the use of questions framed to allow gradations of response rather than a yes-no answer dichotomy. Interestingly, they believed that the possible falsification of replies could be obviated by the threat of disciplinary action. A comparison of the Index to the Neuropsychiatric Screening Adjunct (NSA) was made by Leavitt,[12] who administered both test forms to 768 inductees, and found a correlation value between the two of minus 0.81.* It was felt that neither procedure was designed to detect effectively psycho-pathology.

The Cornell Selectee Index was found by Mansom and Grayson[13] to be an excellent instrument for identifying "sick book riders" (military dispensary visit repeaters) and eliminating non-"sick book riders" when the critical score of 25 or more was used. Their study was made between two groups of 100 each in the largest overseas installation for American Courts-Martial Prisoners, and emphasized, they believed, the psychosomatic dynamics operating with the "sick book rider."

The Cornell Index[14] (Form M-El) was developed from the Selectee and Service Indices, being an elaboration of the former, and containing many of the non-military items of the latter. It is more useful in that the items are grouped according to symptom complexes, and diagnosis is facilitated by this categorizing. Among the applications suggested was industry, where it was felt it could be used by the physicians of the medical department in determining which employees needed guidance for emotional disturbances or lowered morale connected with poor work adjustment.

The originating group used the Index to survey the personality disturbance present among military personnel hospitalized for acute respiratory infections.[15] In another study the incidence of personality disturbances was correlated with certain variables among medical and surgical in-patients in a military hospital[16] through use of the Cornell Service Index; a score of 23 or more significant responses was taken as evidence of a high neurotic potential. Hohman and Smith[17] reported on the use of the Cornell Selectee Index in a psychiatric and physical evaluation of the treatment of acute rheumatic fever in young adults by a psychiatric ambulatory method in contrast with the classical bed-rest immobilization.

Most recently Wechsberg and Sparer[18] used the Cornell Index to indicate the personality differences existing in a hospitalized tuberculous group as compared with a non-hospitalized college sample. While the Cornell Index as a whole did not show significant personality differences between the two groups, the tuberculous group with a high incidence of neurocirculatory disorders did score higher on the neurocirculatory sub-test, an argument for the validity of the Index.

In contrast to the findings of Weinstock and Watson,[11] here the neurotic items of the Index were found to be more discriminating than the "stop" questions.

The Present Study

WHY should one undertake a psychiatric screening of the type that can be effectuated by the Cornell Index? Not only is the writer convinced that every industrial plant has a high percentage of workers who present maladjustments on the job—even if unsought or unrecognized by the Medical Director—but in the particular setting of the Laboratory it is felt that a peculiar heritage has come to play. The emotional milieu in which all residents of Oak Ridge lived during the war has been described by Clarke.[19] This same highly charged tension situation persisted in the post-war period and feelings of impermanence, boom town atmosphere, inflationary living, relocation of urbanites into the Tennessee hills, (or conversely, the moving of ruralists from the surrounding country into the big city of Oak Ridge), mud, Army control, and retained security measures all made for difficulties on the job. The return of the veteran to the Laboratory, the frequent change of operating contractors, and the beginnings of trade union activities made for unsettled work situations. This soon became evident in certain degrees of absenteeism, impaired job efficiency, prolonged alcoholism, increased injury frequency rates, and an upswing in labor turnover. With such conditions present, along with the ubiquitous hazard of radiation, it was deemed wise that a better knowledge be had of all employees, both old and new. It was decided therefore, that a procedure be established whereby reaction patterns could be recorded among the Laboratory personnel. The Cornell Index was selected and administered in several ways: as a survey in which it was completed by groups; as a portion of the pre-placement examination; as a diagnostic tool in the study of those individuals presenting psychosomatic complaints, or those referred by their supervisors because of impaired job performance; and in the workers suspected of accident proneness.

*This does not represent a negative correlation but rather results from the differences in scoring methods used for the two tests.

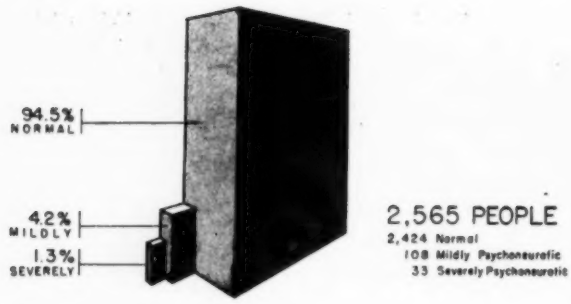

Fig. 1.
Distribution of employee group as to the neurotic tendencies based on results of Cornell Index survey

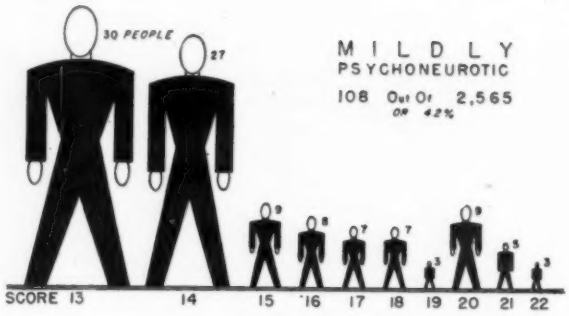

Fig. 3.
Distribution of scores of Cornell Index in "mildly" psychoneurotic group (Scores of 13-22)

The present report is concerned solely with the total score, for the use of this criterion represents the first method employed in reaching those apparently neurotically ill. The recommended scoring level of zero to 12 was used to separate the "normals" from those with a "mild" psychoneurosis. Thirteen to 22 significant responses comprised this latter group, and 23 or over were those tentatively considered as having "severe" psychoneurosis, pending confirming diagnoses. This third group was the first to be called in for interviews and further study.

Of 2565 Indices completed, a range of zero to 50 was found, with a distribution of the scores as seen in Table 1, and Fig. 1.

TABLE 1.
DISTRIBUTION OF TOTAL SCORES OF CORNELL INDEX

Group	Scoring Level	Number	Per Cent	Mean Score	Standard Deviation*
"Normal"	0-12	2424	94.5	2.86	2.84
"Mild" psychoneurosis	13-22	108	4.2	15.59	2.73
"Severe" psychoneurosis	23-50	33	1.3	28.58	5.68

*The standard deviation is a measure of the variation of the individual scores from the mean in terms of the original unit of measurement so as to give a typical deviation. For example, a standard deviation of 4.00 would mean that each individual score in the sub-group being considered was, on the whole, approximately four Cornell scoring points from the mean of the sub-group. This gives a measure of the scattering of the scores in the sub-group, a large standard deviation representing considerable scattering and a small standard deviation showing considerable grouping about the mean.

Of the entire group studied, 5.5%, or 141 individuals, presented sufficiently high scores to warrant study by interview. The remaining 2424 were deemed, for the time being at least, as "normal" and were called in at later dates, after most of the persons with psychoneurotic tendencies were examined and interviewed.

Figs. 2, 3 and 4, show the score distribution among the employees tested, by grouping of "normal," "mildly" psychoneurotic, and "severely" psychoneurotic individuals.

The racial distribution of the same groups is seen in Table 2 and Fig. 5.

TABLE 2.
RACIAL DISTRIBUTION OF THE THREE SCORE GROUPS

		White	Colored
"Normal"	Number	2299	125
	Per cent	95.1*	84.5
	Mean Score	2.27t	3.94
	Standard Deviation	2.79	3.24
"Mildly" Psychoneurotic	Number	93	15
	Per cent	3.8	10.1
	Mean Score	15.66	15.20
	Standard Deviation	2.79	2.37
"Severely" Psychoneurotic	Number	25	8
	Per cent	1.1	5.4
	Mean Score	27.88	30.75
	Standard Deviation	4.11	8.61

*Italicized figures on the per cent line represent a significant difference at the .95 confidence level between the number represented by the italicized per cent and the number found for the balance of the distribution within the specific Cornell Index score group. This significance was tested by the X^2 method.

t Italicized figures on the Mean Score line represent a significant difference at the .95 confidence level of significance between this mean and the mean of the balance of the distribution within the Cornell Index score group. The "t" test of significance of difference in means was used.

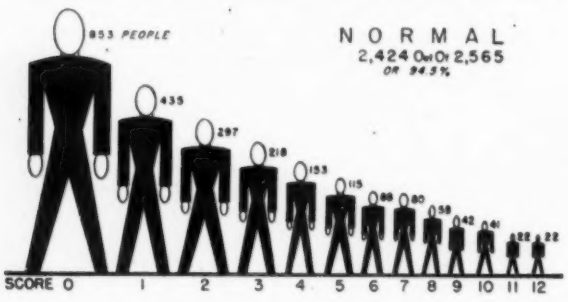

Fig. 2.
Distribution of scores of Cornell Index in "normal" group (Scores of 0-12)

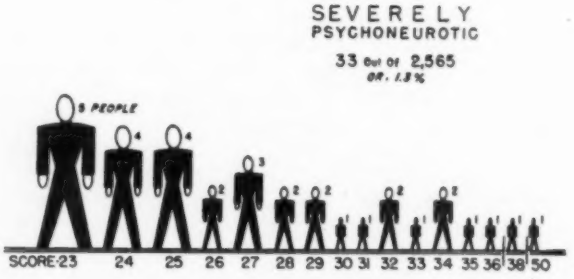

Fig. 4.
Distribution of scores of Cornell Index in "severely" psychoneurotic group (Scores of 23-50)

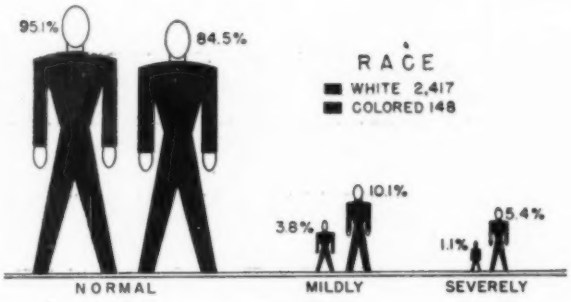

Fig. 5.
Racial distribution of the three score groups

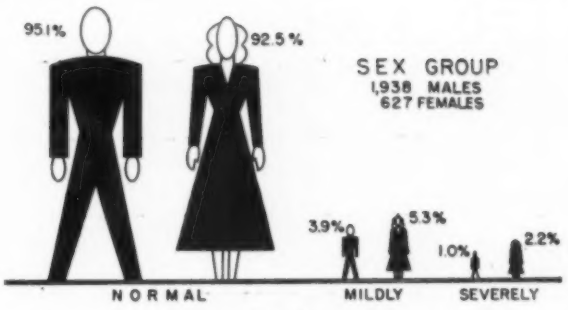

Fig. 6.
Sex distribution of the three score groups

The distribution of the three score groups by sex is demonstrated in Table 3 and Fig. 6.

TABLE 3.
SEX DISTRIBUTION OF THE THREE SCORE GROUPS

		SEX	
		Male	Female
"Normal"	Number	1844	580
	Per cent	95.1	92.5
	Mean Score	2.13	3.07
	Standard Deviation	2.70	3.14
"Mildly" Psychoneurotic	Number	75	33
	Per cent	3.9	5.3
	Mean Score	15.57	15.42
	Standard Deviation	2.89	2.35
"Severely" Psychoneurotic	Number	19	14
	Per cent	1.0	2.2
	Mean Score	38.32	28.93
	Standard Deviation	4.48	6.97

Table 4 and Fig. 7 demonstrate the distribution as to marital status among the three groups.

TABLE 4.
MARITAL STATUS DISTRIBUTION AMONG THE THREE SCORE GROUPS

		MARITAL STATUS			
		Single	Married	Widowed	Divorced
"Normal"	Number	689	1677	8	50
	Per cent	93.6	94.9	100.0	92.6
	Mean score	2.56	2.25	2.50	3.12*
	Standard Deviation	2.94	2.77	2.06	3.46
"Mildly" Psychoneurotic	Number	35	69	0	4
	Per cent	4.8	3.9	0	7.4
	Mean score	15.69	15.49	0	16.50
	Standard Deviation	2.93	2.63	0	2.50
"Severely" Psychoneurotic	Number	12	21	0	0
	Per cent	1.6	1.2	0	0
	Mean score	28.33	28.71	0	0
	Standard Deviation	5.10	5.98	0	0

*This figure does not meet precisely the test for .95 confidence level of significance, but approximates it so closely, that for practical purposes, it may be considered significant.

In reviewing the comparative results among the three classifications as they are distributed among the common identifying factors of race, sex, age and marital status, it is revealed that significant differences in the groups exist. In the "normal" 2424, the percentage of white employees was significantly higher at 95.1% (colored 84.5%), with the converse demonstrating that the colored employees were significantly higher in both the "mildly" and "severely" psychoneurotic classifications with 10.1% and 5.4% respectively, as compared to the white group at 3.8% and 1.1%. When comparing the resultant figures to the group as a whole (Table 1), it is seen that the Negro employees of the "normal" group were 10% fewer in number than the entire tested personnel, and 4.1% more numerous in the "severely" psychoneurotic class.

Female employees were significantly lower in the "normal" distribution, being 92.5% as compared to the males at 95.1%. Proportionately more females were classified as "severely" psychoneurotic (2.2%) than their male fellow employees. There was no significant difference between the two in the group of 108 "mildly" psychoneurotic.

Youth apparently spelled instability, for the 15 to 19 year old group presented the lowest significant percentage of any age bracket among the 2424 "normals" at 89.3%, the personnel as a whole being 94.5%. Likewise, their percentage of 4.1 was the highest of the "severely" scored group. Again, no significant differences in so far as age was concerned were detected in the second, or "mild," group.

Interestingly, the mean scores for the single and divorced groups were significantly higher than for the balance of the Laboratory population among the "normal" section, with the married employees presenting a significantly lower mean value. The marital status of the employees

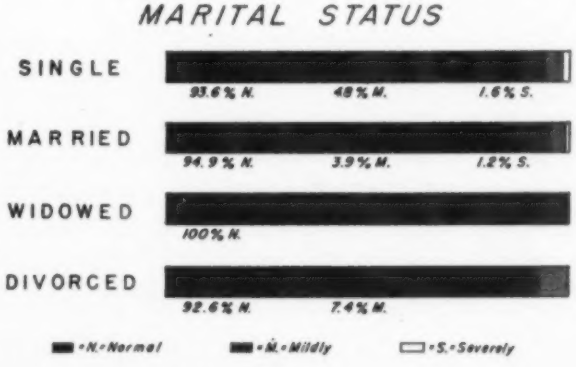

Fig. 7.
Marital status distribution of the three score groups

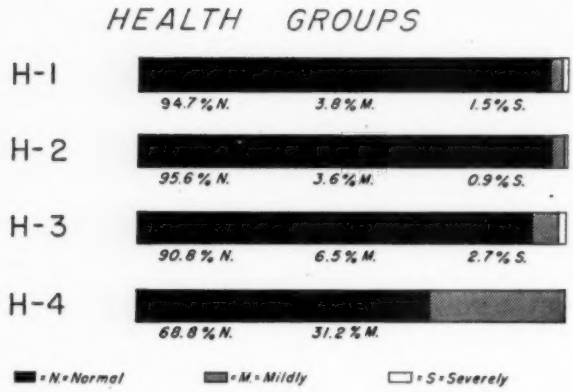

Fig. 8.
Health status classification distribution of the three score groups

created no significant differences in the "mild" and "severe" groups, all percentage values being relatively equal.

The distribution of the three scoring groups by health status classification may be seen in Table 5 and Fig. 8. Employees are classified on the basis of their physical findings at the time of the pre-placement physical examinations or periodic examinations conducted at later dates:

Class I: Physically qualified for any position.

Class II: Physically qualified for any position, but has minor defects.

Cass III: Physically qualified for special employment, with one or more of 25 restrictions.

Class IV: Physically unqualified for position applied for.

The last classification represented those permanently deferred from employment because of disqualifying physical defects.

TABLE 5.
HEALTH STATUS DISTRIBUTION OF THE THREE SCORE GROUPS

		HEALTH STATUS CLASSIFICATION			
		Class I	Class II	Class III	Class IV
	Number	630	1447	336	11
	Per cent	94.7	95.6	90.8	68.8
"Normal"	Mean score	2.36	2.23	2.94	1.55
	Standard Deviation	2.90	2.94	3.11	1.37
	Number	25	54	24	5
"Mildly"	Per cent	3.8	3.6*	6.5	31.2
Psychoneurotic	Mean score	15.80	15.30	16.17	15.00
	Standard Deviation	2.77	2.47	3.14	2.61
	Number	10	13	10	0
"Severely"	Per cent	1.5	0.9	2.7	0
Psychoneurotic	Mean score	26.20t	30.92	27.90	0
	Standard Deviation	4.35	6.90	3.53	0

*This figure does not meet precisely the test for .95 confidence level of significance, but approximates it so closely, that for practical purposes, it may be considered significant.

t This figure failed to meet the test for significance at the .95 level, but approximated significance at the .90 confidence level.

The distribution by education attainment levels was studied and the results appear in Table 6 and Fig. 9.

The educational groupings in this study were:

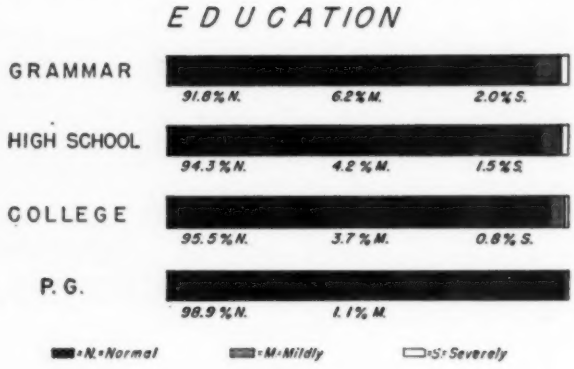

Fig. 9.
Education attainment level distribution of the three score groups

Grammar school—all schooling up to and including 8th grade education.

High school—all schooling of more than eight years up to and including 12 years.

College—all schooling of more than 12 years up to and including 16 years.

Post-Graduate—all schooling of more than 16 years.

TABLE 6.
EDUCATION ATTAINMENT LEVEL DISTRIBUTION OF THE THREE SCORE GROUPS

		EDUCATIONAL CLASSIFICATION			
		Grammar School	High School	College	Post-Graduate
	Number	412	1115	716	181
	Per cent	91.8	94.3	95.5	98.9
"Normal"	Mean score	2.51	2.25*	2.39	2.52
	Standard Deviation	2.79	2.81	2.84	3.11
	Number	28	77	28	2
"Mildly"	Per cent	6.2	4.2	3.7	1.1
Psychoneurotic	Mean score	15.36	15.58	15.93	14.50
	Standard Deviation	2.59	2.76	2.88	0.50
	Number	9	18	6	0
"Severely"	Per cent	2.0	1.5	0.8	0
Psychoneurotic	Mean score	31.11*	28.39	25.33*	0
	Standard Deviation	9.19	4.11	2.79	0

*These figures failed to meet the test for significance at the .95 level, but did approximate significance at .90 confidence level.

Another breakdown is that of occupations. The Laboratory personnel have been divided into rather broad groups for this study, as follows:

Professional: Chemists, biologists, physicists, engineers, top managerial employees, and scientific technical assistants.

Clerical: All clerks, irrespective of place of assignment.

Operators: All operators of chemical, power, or automotive equipment.

Protective: Guards and firemen.

Crafts: All the skilled trades such as carpenters, welders, electricians, etc.

Custodial: Janitorial personnel.

Laborer: Unskilled employees engaged in heavy labor.

Table 7 and Fig. 10 show their distribution.

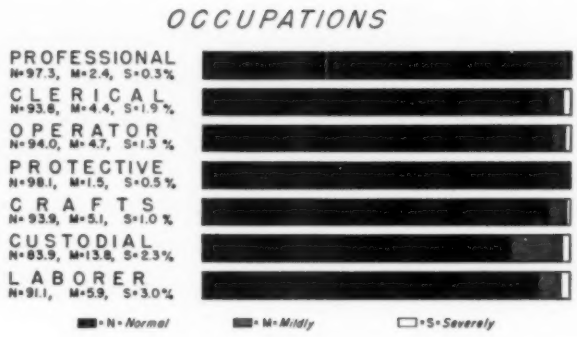

Fig. 10.
Occupational distribution of the three score groups

In reviewing the factor distributions given above it was seen that in so far as health status is concerned, the Class II group, those with minor physical defects, was the significantly higher group in the "normal" section, with 95.6%. Those who failed to qualify physically, Class IV, were significantly low at 68.8%. This latter group, Class IV, was the significantly higher at 31.2%, of the "mildly" psychoneurotic employees, whereas Class III was the higher of the "severely" psychoneurotic personnel. It is of interest to note that of the "severely" psychoneurotic, the highest mean of 30.92 representing the highest number of questions answered with positive significance, was seen in the Class II group. Presumably, from the above, it may be judged that those workers with some defects, with which they have learned to live, have made the best adjustment, and scored best on the Cornell Index.

TABLE 7.
OCCUPATIONAL DISTRIBUTION OF THE THREE SCORE GROUPS

		Professional	Clerical	Operator	Protective	Crafts	Custodial	Laborer
"Normal"	Number	660	750	140	202	384	73	215
	Per cent	97.3	93.8	94.0	98.1	93.9	83.9	91.1
	Mean Score	2.99	2.63	1.79	1.77	2.09	4.45	2.35
	Standard Deviation	2.76	3.01	2.47	2.32	2.68	3.32	2.84
"Mildly" Psychoneurotic	Number	16	35	7	3	21	12	14
	Per cent	2.4	4.4	4.7	1.5	5.1	13.8	5.9
	Mean Score	16.25	15.00	16.86	15.33	15.57	15.50	15.86
	Standard Deviation	3.05	2.01	3.91	1.89	2.95	2.57	2.91
"Severely" Psychoneurotic	Number	2	15	5	1	4	2	7
	Per cent	0.3	1.9	1.3	0.5	1.0	2.3	3.0
	Mean Score	24.00	27.60	24.50	32.00	30.00	37.50	29.29
	Standard Deviation	1.00	4.00	0.50	0	3.67	12.50	5.15

In reviewing the factor distributions given above it was seen that in so far as health status is concerned, the Class II group, those with minor physical defects, was the significantly higher group in the "normal" section, with 95.6%. Those who failed to qualify physically, Class IV, were significantly low at 68.8%. This latter group, Class IV, was the significantly higher at 31.2%, of the "mildly" psychoneurotic employees, whereas Class III was the higher of the "severely" psychoneurotic personnel. It is of interest to note that of the "severely" psychoneurotic, the highest mean of 30.92 representing the highest number of questions answered with positive significance, was seen in the Class II group. Presumably, from the above, it may be judged that those workers with some defects, with which they have learned to live, have made the best adjustment, and scored best on the Cornell Index.

The educational picture seems to point up the fact that the greater the amount of formal learning, the less the neurotic trend. Of the four sub-groups educationally, those of the post-graduate level scored highest in the "normal" group, with the significant total of 98.9%, as contrasted to the significantly low total of 91.8% of those workers with a grammar school education. Those with the minimal schooling scored highest in the "mildly" psychoneurotic group (6.2%) and also highest in the "severely" psychoneurotic section, although not significantly so, at 2.0%.

An explanation relative to this differential will be offered at a later point.

Paralleling this somewhat are the findings when occupational sub-groups are studied. The lowest total in the "normal" group (83.9%), and the highest totals in the "mildly" and "severely" psychoneurotic groups (13.8% and 37.5%) were attained by those engaged in custodial work, which represents, along with laborers, those employees with the least education. (The male Negro employees were classified as custodial or laboring. Sixty-eight per cent perform unskilled labor, the remainder doing semi-skilled work in laboratories, the laundry, or in tool rooms. It will be recalled that the Negro workers scored

The final study consisted of the comparison of veterans (World War II only) and non-veterans in so far as they relate to the neurotic state (See Table 8, Fig. 11).

TABLE 8.
VETERAN STATUS DISTRIBUTION OF THE THREE SCORE GROUPS

		Veteran Status	
		Veterans	Non-Veterans
"Normal"	Number	523	1901
	Per cent	95.8	94.2
	Mean score	2.33	2.37
	Standard Deviation	2.93	2.82
"Mildly" Psychoneurotic	Number	17	91
	Per cent	3.1	4.5
	Mean score	15.35	15.64
	Standard Deviation	2.61	2.76
"Severely" Psychoneurotic	Number	6	27
	Per cent	1.1	1.3
	Mean score	26.67	29.00
	Standard Deviation	3.04	6.04

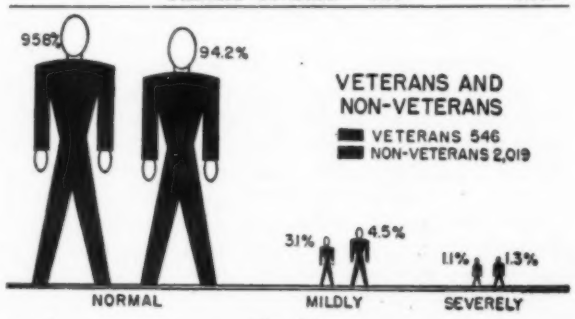

Fig. 11.
Veteran status distribution of the three score groups

An explanation relative to this differential will be offered at a later point.

Paralleling this somewhat are the findings when occupational sub-groups are studied. The lowest total in the "normal" group (83.9%), and the highest totals in the "mildly" and "severely" psychoneurotic groups (13.8% and 37.5%) were attained by those engaged in custodial work, which represents, along with laborers, those employees with the least education. (The male Negro employees were classified as custodial or laboring. Sixty-eight per cent perform unskilled labor, the remainder doing semi-skilled work in laboratories, the laundry, or in tool rooms. It will be recalled that the Negro workers scored

significantly high in the Cornell Index). The protective personnel scored significantly highest in the "normal" group (98.1%) and significantly lowest in the "mildly" psychoneurotic breakdown. There was but one such worker in the "severely" psychoneurotic scoring bracket. The highest occupational group in the last category was the laborer section with 3.0%.

In the survey of the veterans, who numbered 546 individuals, there were no significant differences encountered between them and the non-veterans in any of the three scoring groups.

The distribution by age of the "normal," "mildly" and "severely" neurotic groups appears in Table 9 and Fig. 12.

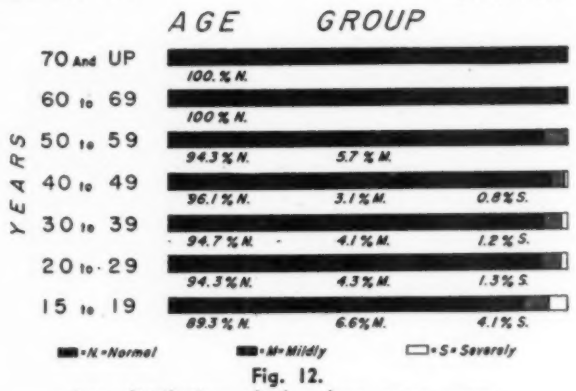

Fig. 12.
Age distribution of the three score groups

AGE DISTRIBUTION OF THE THREE SCORE GROUPS
TABLE 9.

		Age Groups in Years						
		15-19	20-29	30-39	40-49	50-59	60-69	70 & over
"Normal"	Number	109	1133	733	346	82	19	2
	Per cent	89.3	94.3	94.7	96.1	94.3	100.0	100.0
	Mean Score	2.76	2.48	2.15	2.22	2.49	2.68	3.00
	Standard Deviation	3.08	2.97	2.60	2.75	2.95	2.52	2.00
"Mildly" Psychoneurotic	Number	8	52	32	11	5	0	0
	Per cent	6.6	4.3	4.1	3.1	5.7	0	0
	Mean Score	14.50	15.69	16.03	15.18	14.40	0	0
	Standard Deviation	2.18	2.71	2.84	2.37	2.80	0	0
"Severely" Psychoneurotic	Number	5	16	9	3	0	0	0
	Per cent	4.1	1.3	1.2	0.8	0	0	0
	Mean Score	27.00	28.94	29.56	26.33	0	0	0
	Standard Deviation	4.34	4.45	8.25	1.25	0	0	0

DISCUSSION

The Worth of the Index

IT WAS of extreme interest to use the Cornell Index in such a group as presented by the Laboratory. The personnel involved, the educational levels encountered, the personality patterns of those who completed the Index forms, all made for unusual reactions. This cross section of population led to varying methods of accomplishment of the Index by new and old employees. Literacy, of course, is necessary to complete the form, but in view of the fact that a certain percentage of applicants was unable to read or write, assistance had to be given. Illiterate whites were read the questions by a reception room clerk, and the Negro staff nurse of the Health Division aided colored workers in filling in the forms. In contrast to the figure of Weider, Mittelmann, Wechsler, and Wolff, cited above, of 70% of Negroes being unable to complete the blanks, only 18% of the Laboratory's colored workers needed help. Whereas during the war years many of the Negro employees were laborers coming from Alabama, the group tested in the post-war period was comprised essentially of colored personnel from Tennessee, definitely not the "deep south," and differing somewhat in the educational facilities made available to growing Negro youth.

Most of the other workers found little difficulty in completing the Index, but certain exceptions did exist. Very frequently the guilt-stricken employee, most often one at the upper educational level, would refuse to take the test, or in some instances would circle the answers involving the somatic area only, and would leave the neurotic and psychotic zones frigidly alone, with a firm pencil line ending the section he wished to answer voluntarily. Seen not infrequently in cases of the physical scientists was the difficulty encountered by those individuals in answering the questions directly, without throwing semantic road-blacks up in their own paths. As an example, one sees the following in an Index submitted by a physicist: (a) 31 words underscored indicating long pauses during the test at which times he was endeavoring to establish a rating scale for every adverb, rather than attempting to answer the question directly without extensive introspection and the setting up of numerically equivalent yardsticks for commonly used terms of frequency or severity. Such words as *always, often, sometimes, severe, frequent, usually, completely, anywhere, badly,* and *every time,* were underlined, indicating almost a feeling of frustration in his effort to put an exact measure up to his past medical history,

finding that the human equation fails to fit the established devices of mensuration of the physical scientists; (b) 31 question marks scattered about, usually to the left or right of the "yes" and "no" columns, and (c) 32 written-in comments, attempting further to delineate sharply the temporally qualifying adverbs noted previously.

To those accustomed to using the immutable laws of science in their daily work, this type of appraisal form cannot be handled in a casual manner. Perhaps for these precisionists each question should have a multiple choice form of answer, specifically itemizing time values.

The Cornell Index, however, was invaluable in spotting poor employment risks. One case, that of a handsome, muscular lad of 20 years of age, demonstrates the pre-placement value of the appraisal form. He applied for a position as patrolman, which necessitated the wearing and possible use of side arms. His high score of 14, coupled with the fact that 13 of these significantly answered questions were in the neurotic and psychotic question groups, demanded that additional psychometric procedures be carried out. Projective drawings, the Thematic Apperception test, and the Rorschach test revealed a person who, under no circumstances, ever should be allowed access to firearms. In this manner, through use of the Index, a catastrophe was averted by deferring employment.

Another applicant, for work as a messenger, also a male aged 20, offered a score of 14. It was recommended to the Employment Section that he not be hired, but the supervisor under whom this man was to work asked that he be given a chance. Against better judgment, the examining physician acquiesced. In 30 days' time, he terminated his services since he could not adjust to the job. These are but examples, selected in passing, wherein the Index has proved its worth in identifying the neurotically ill individual. It is anticipated that in another study a correlation will be made between those receiving high test scores and their job adjustment, or need for counseling.

On a few occasions employees seeking help for their emotional problems have been asked to complete a second Cornell Index, either by filling in a new sheet or over-scoring the old form with colored pencil. It was mentioned specifically at each time that it was believed the first Index form did not give a true likeness of the person and that perhaps in a different light it might be completed to effect greater validity. In each instance the score rose from zero or one to several point higher. It is felt that were the forms to have been answered at a time when the Health Division's program in mental health had become better known, less dissimulation would have taken place and a truer Index score would have resulted.

The form itself serves as an excellent reason for the recalling of an individual employee to the Dispensary. It is much more logical and considerably easier to open an interview with the desire of clarifying some of the points on the Index, than to begin talking from out of the clear blue, with no apparent reason for the discussion. The conversational wedge it offers is invaluable. It must be stressed, as it has been by others, that the Cornell Index is not an end in itself but a means to an end, that is the evaluation of the stability or adjustment of the worker. The Index is but a springboard from which one carries the investigation of psyche, and is but one of several testing media that can be employed in industry. The simplicity of the test, the ease of completion and scoring, and the brevity of the procedure make for a valuable appraisal tool; when used under careful supervision the worth of the questionnaire is proved by identification of the neurotically ailing person.

Use of the test should be completely within the hands of medically trained professional personnel, who can interpret the results, who will not be swayed emotionally by the mere presence of a high score, and who will treat the form as a privileged communication. It is the writer's belief that the care with which its use has been permitted should be continued, for misuse can alienate not only industrial medicine in the eyes of the worker, but also psychometry, psychology, and psychiatry, and every other psyche-connected specialty with which the angered worker is likely to identify the test. At best, an industrial health program represents years of building of goodwill, and a loosely handled form should not be allowed to tear down what has taken so long to build. It is suggested that perhaps not all Medical Directors be permitted its use, for fear that a physician who places high values in scores alone would use it as a disqualifying argument in employment, with no consideration being given the components of the score, the rehabilitative potential of the work applicant, or the personal features of the individual that might lead to a high but invalid score. A discriminating industrial nurse, who analyzes and evaluates her employee-patients, could use this form to great advantage, not only as she may attempt limited counselling herself but also to carry out referrals when indicated. As a test instrument used by employment personnel, it is felt to be out of its more healthful environment. In brief, for an instrument not too keenly sharpened, but singularly penetrating, the Cornell Index can be recommended for use by the industrial health service in the detection of personality aberrations among the plant population.

The Findings

OF THE 2,656 taking the test, 94.5% were rated as "normal," which is encouraging in view of the long lamenting that followed the release of the Selective Service rejection figures and the Armed Services discharge rates of psychoneurotic veterans. The Index did detect 141 individuals with psychosomatic difficulties, or neurotic tendencies, who, if left unidentified might

prove troublesome in their effect on co-workers through impairment of morale or disaffection.

The Negro worker was significantly higher in number in the "mildly" and "severely" psychoneurotic groups, as revealed by the test, and in view of the many repressed resentments, hostilities, and the overt frustrations and disappointments experienced by this racial group, this finding seems not out of line. It is hoped that one day equity in educational and occupational opportunities can be established so that the undesirable by-products of group tensions no longer will be manifest in affections of the psyche.

A significantly higher percentage of male employees scored in the "normal" range which, perhaps, may be explained by some not too tenable arguments. The woman worker, it is believed, is more inclined to answer the Index to the best of her ability, and may answer positively certain questions which her male fellow-worker may dismiss as being of no importance. Secondly, many of the Laboratory's female employees are working mothers, and irrespective of the help that such a mother might have in running her household, she still is attempting to make a success of a double career, job-holder and homemaker, and if one or the other does not suffer, then some variation from the normal personality pattern can be expected. With living costs continuing to rise, more wives and mothers, who heretofore have devoted their efforts to managing the household exclusively, may be expected in industry, and the emotional problems accompanying such a career-switch may be seen with greater frequency. These are not the untempered comments of a misogynist, but merely the desires of a dispassionate observer to explain the slightly more prominent position of the distaff side of the personnel in the "mildly" and "severely" psychoneurotic groups.

Youth displayed its personality instability by falling low in the "normal" group and hitting a significantly high figure in the "severely" psychoneurotic bracket. The 15 to 19 year old group, to which this applies, represents an occupationally unstable selection of workers, and an untrained group of people. Fresh from high school, there has been inadequate guidance, apparently, to direct them towards further study, and if the latter were contra-indicated, there was not enough desire to secure the vocational training needed to place one in any position better than that of clerk or messenger. Women in this group tended to remain in their jobs, while the males showed a high labor turnover.

Marital status was not an influencing factor one way or the other in determining a neurotic tendency, as judged by total percentages attained by score groups.

It is encouraging to learn that those employees not in the physically perfect group and yet not markedly impaired would score high in the "normal" group and low in the other two groups. Their dysfunctions have led to no neurotic development, for seemingly they have learned to live with their minor disabilities.

The post-graduate group's scoring high in the "normal" segment cannot be explained validly by the virtues of higher education. In view of the number of such workers, i.e., those with master of arts and doctorate degrees, seeking personnel counsel at various times during their employment, one is inclined to label this finding as artifact, resulting from the unwillingness of this group to record their own true reactions to life situations. The grammar school graduate group was high in the "mildly" psychoneurotic portion, and perhaps this is in keeping with their low income, a concomitant of greater need for medical care, which bespeaks not only physical but emotional below par-ness. The corollary of this is seen in the occupational groupings where the custodial and laborer personnel scored significantly low at the "normal" level. The interrelation of income, job level, and security cannot be denied in this example.

The lack of difference between veterans and non-veterans belies the many statements relative to the poor emotional potential of wartime servicemen. As civilians, they adjust well to their jobs and living, whereas as soldiers or sailors, their adjustment to the military scheme was presumably difficult. The post-war occupational adjustment of the veterans at the Laboratory is described in a separate communication.[20]

Summary

A KNOWLEDGE of the personality pattern of the worker is necessary, to effectuate good job placement.

2. The development and use of the Cornell Index, a rapid and efficient screening device used to detect neurotic illness, are described.

3. The use of the Cornell Index at the Oak Ridge National Laboratory is outlined where it has been employed as a survey instrument, as an adjunct to the pre-placement physical appraisal procedures, as a diagnostic tool in the study of individuals presenting psychosomatic complaints, and as a yardstick of emotional stability in those workers referred by supervision because of impaired job performance.

4. The scoring levels used were (a) 0 to 12 inclusive indicating the "normal" group, (b) 13 to 22 significant questions answered positively indicating the "mildly" psychoneurotic group, and (c) 23 and over, those considered as "severely" psychoneurotic.

5. A total of 2565 Cornell Index forms was completed, 94.5% of which gave a "normal" classification, 4.2% being considered "mildly" psychoneurotic, and the remaining 1.3% falling into the "severely" psychoneurotic group, according to total score.

6. The racial distribution of the test scores showed the white group to be significantly higher than the Negro group in the "normal" classification.

7. Males predominated over females in the scoring group "normal."

8. The age group 15 to 19 years led the other age brackets in the "severely" psychoneurotic class, and trailed the other significantly in the "normal" segment.

9. Marital status proved to be no influencing factor in the distribution of the test scores.

10. Those workers who were physically qualified for any position but had minor defects placed significantly higher in the "normal" group, and significantly lower in both other groupings, as contrasted with those physically qualified for any position, and those physically qualified for special employment only, with certain job restrictions.

11. From an educational consideration, a greater percentage of those with post-graduate training placed in the "normal" group than did the grammar school, high school, or college graduates. Those who finished grammar school only, were significantly high in the "mildly" psychoneurotic category.

12. Of the professional, clerical, operator, protective, crafts, custodial, and laborer groups the protective personnel scored highest among the "normal" section, and custodial the lowest. The latter group attained the highest percentage among the "mildly" psychoneurotic, and top position in the "severely" psychoneurotic was occupied by the laborer group.

13. No differences as to scoring were seen between veterans and non-veterans.

14. Examples cited show that the Cornell Index is a valuable tool in identifying those applicants for employment who may prove to be poor work risks.

15. The Index is completed most efficiently by those who do not analyze the qualifying words and phrases used in the text form for their final nuance of meaning. Its use by scientists at a high academic level is to be questioned, for it no longer remains a simple diagnostic instrument, but an argument in sematics. For the "man-in-the-street" employee, the form is ideal in scope, understanding and simplicity.

16. Its use as a springboard towards other diagnostic steps in the study of the emotionally impaired in industry is emphasized.

17. It is suggested that its use in the industrial scene be limited to those who place values on interpretations of test results and not on scores, to those who realize the rehabilitative potential of the applicant for work, and to those who hold clinical documents in sacred trust as privileged communications.

18. Explanations are ventured for the statistical results encountered.

Conclusions

INDUSTRY needs a rapid screening device, easily completed by the applicant for employment or the current employee, that can aid in the detection of the neurotically ill individual. This need is met by the Cornell Index.

2. A system of categorizing employees on the basis of test scores into "normal," "mildly" psychoneurotic and "severely" psychoneurotic groups is valid in so far as it offers the Medical Director a guiding signpost as to which employees require assistance first in the resolution of their emotional problems.

3. A simple test procedure of this type serves the Medical Director as a lead in his efforts to understand the reasons for absenteeism, increased injury frequency, diminished production, elevated labor turnover, worker inefficiency, and lowered employee morale when based on defects in the personality structure.

4. The Cornell Index is recommended for use by the industrial health service when an energetic mental hygiene program seems indicated to the enterprising Medical Director who wishes to study, understand, and help the whole man, and not just his component somatic parts.

[ACKNOWLEDGMENT: Grateful acknowledgment for invaluable assistance is extended to MISS MARJORIE C. SHIPE and MRS. IDA CHAMBERS for the initial tabulations, to MRS. MARY D. OWEN for the statistical interpretations, to MR. GLENN C. WILLIAMS for the illustrations, to MISS HELEN ZANG for the preparation of the manuscript, and to DR. ALSTON S. HOUSEHOLDER for his guidance in statistical methods.]

NOTE: This paper was reviewed by DR. KEEVE BRODMAN who stated, because of the complexity of the population that is dealt with in this study, the effects ascribed, such as education and occupation, might, in actuality, be due to other factors such as age, color or sex. This point is granted—and that other informative conclusions might be reached with additional statistical treatment.

He cautioned against concluding that the factors studied influenced neuroticism. It might be mentioned that practically all the individuals attaining high scores in the test group were interviewed later, receiving counseling at a later time. It is believed, in our experience, that the man who is neurotically ill will be revealed by the Cornell Index.

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[ADDENDUM: Since the manuscript was submitted for publication, one additional use of the Cornell Index has been encountered, i.e., DARKE, R. A., and GEIL, G. A.: Homosexual Activity: Relation of Degree and Role to the Goodenough Test and to the Cornell Selectee Index. *J. Nerv. & Ment. Dis.*, 108:217 (Sept.) 1948. As used, the Cornell Selectee Index indicated that subjects who are overwhelmingly homosexual in activity, by preference, in a group of 100 male homosexuals, demonstrated significantly more indications of neurotic disturbance, while subjects having taken the male role in homosexual activity, upon institutionalization, showed significantly fewer neurotic tendencies. Oral fellators evidenced a significant increase over active sodomists in the number of significant answers on the Cornell Selectee Index.]

American Association of Railway Surgeons

THE Sixty-First Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS will be held at the Drake Hotel, Chicago, Ilinois, on Thursday, June 30, Friday, July 1 and Saturday morning, July 2, 1949.

An exceptionally interesting and instructive scientific program has been arranged, which will be given from 10:00 to 12:30 on each of the three mornings, and from 2:00 to 4:30 on the first two afternoons.

The morning sessions will include 12 papers on various medical and surgical subjects, by outstanding authorities. The two afternoon sessions will be devoted to symposia on "Lesions of the Bones and Joints" and "Intra-thoracic Disorders."

The Annual Dinner will be held at the Drake Hotel on Friday evening, July 1, 1949.

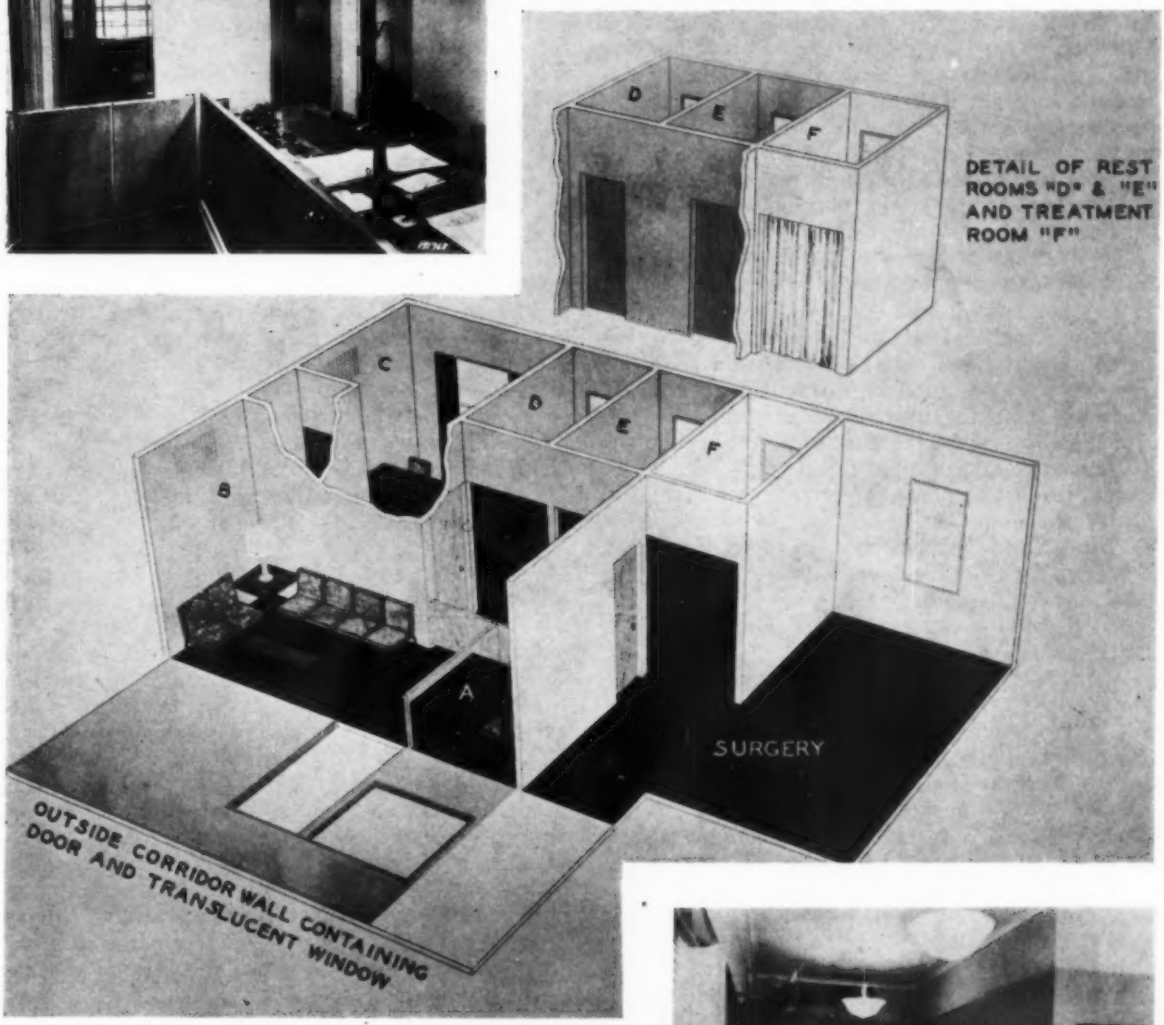
Room reservations may be made at the Drake Hotel or at the nearby Knickerbocker Hotel.

There will be a technical exhibit in conjunction with the scientific meetings.

A 500-Employee Medical Department Layout

C. E. MARTIN, M.D.,
Medical Director, Bell Telephone Laboratories, Inc.

ONE of our laboratories employing 500 people is located in a rural area. Nearby is a town of approximately 15,000 people with adequate hospital and other medical facilities. Until recently, the Medical Department had been inadequate both in point of size and in the disposition of rooms. It has now been re-designed in a new location, and has proved extremely workable. The staff consists of a full-time nurse, a part-time physician and a part-time clerical helper. Inasmuch as the nurse is the individual who will be present regularly, her station was so placed that the entrance and all of the other rooms are visible from it.



A photograph of an isometric projection with the corridor wall folded outward. It will be seen that the nurse's location, "A," is surrounded by a waist high partition. From her location she can observe the waiting room "B," the physician's office, "C," the entrances to the rest rooms "D" and "E," and directly behind her is the surgery with a treatment room "F"

ABOVE: Nurse's station. Entrance to the Medical Officer's office on left; rest rooms ahead; entrance to surgery on right. RIGHT: Taken from nurse's station. Entrance door and translucent window, left; waiting room ahead; doctor's office; right

Health is Big Business for Small Industries

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THE title of my discussion, "Health Is Big Business For Small Industries," may be somewhat misleading, in that it carries the implication that "health" may or may not be "big business" for some particular industrial organizations. I trust you will bear with me then, if I emphasize the fact that health is big business for *all* industry, and that the size or extent of an enterprise cannot alter the fundamental axiom that health is of the essence of productivity. While it is true that the nature of an industrial entity will necessarily determine in large measure the medium that is used to implement the health program, it is equally true that even the smallest business cannot afford to disregard the principle that good health, high morale and maximum output are so closely interrelated and interdependent as to be practically inseparable.

The relation between good health and economic status is well established. It is significant that surveys by the National Association of Manufacturers and other business advisory groups reported that medical care for personnel tends to promote efficiency, reduce occupational disease, lessen accident frequency and cut absenteeism, as well as decrease labor turnover, lower compensation costs and improve labor-management relations. Many employers now recognize that it is just as sound business practice to invest in the health and productivity of their employees as it is to set aside reserves for depreciation and replacement of equipment.

Statistical data, regardless of how developed, are frequently most convincing, and, in fact, are truly probative when we are dealing with mechanical performance and efficiency. We know that by the application of certain standard formulas under a given set of conditions, the operating characteristics, output, maintenance requirements, and even the life expectancy of machinery, can be determined with extreme accuracy. The existence of the human factor in developing productive statistics about people, however, introduces intangibles which, depending upon the effect given them, can be made to produce almost any result we want to get. I have always been chary of empirical formulas, and the events, now a matter of history, which occurred on a certain Tuesday of November justify one's distrust of the predictability of human emotions. I am trying to point out to you that the only dependable statistics relating to people as individuals or groups of individuals, are "after the fact" statistics. I can tell you, for instance, that the most recently available labor statistics show that the average employee in the United States is absent from his job for about 12 days each year because of illness. These figures, translated into hours of output indicate an annual loss in national productivity of approximately 5%. These are "experience figures," not merely somebody's guess. Similarly, you won't find it difficult to understand that there is a collateral loss in output amounting to another 2% caused by ineffectiveness on the job due to the existence of latent or chronic disease, undiagnosed and consequently untreated. It is difficult, if not actually impossible as I have implied, to make an analytically sound prognostication as to how much this 7% loss figure might be reduced by the universal adoption throughout the industry of competent health programs. But this we do know: that our absence experience rate, excluding the war years, is decreasing just as surely as medical and health programs are increasing and expanding. The worker who knows that the means of maintaining his health and earning capacity are readily and immediately available, certainly feels more secure in his job, has less worry and consequently higher morale than the employee who must depend exclusively upon his own resources for medical and health care. I don't believe that there is logical room for debate in the statement that all industry can benefit by improved worker health.

WHAT about costs? You know, and I know, that the balance sheet is a very important and very practical gauge of the profitability of any enterprise, large or small; likewise, I am sure, we are in agreement that the basic reason for the existence of any industry or business is the earning of a profit. Outside the realm of pure philanthropy you don't invest capital in plant equipment and manpower for any other reason than that you anticipate a reasonable return on your investment. Of those elements which constitute an industrial investment, the most valuable asset is manpower, and it is certainly the responsibility of industry to see to it that "manpower" receives such care and consideration as is appropriate to its top position in the scheme of our industrial economy. I can't conceive of a plant manager in this day and age, ordering, installing and operating mechanical equipment without (1) determining exactly what is to be required of the equipment, (2) securing the best equipment for his needs, (3) having it installed by competent mechanics, and (4) establishing an operational maintenance program to insure optimum efficiency and useful life. Is there any moral or practical reason why we should do *less* for the individual, without whom the equipment could not have existed, let alone be operated?

The basic requirement of a good industrial

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health program is to introduce pre-placement physical examinations. The examination is not performed primarily to determine the ability of the individual to perform work but rather to ascertain if he is able to do the specific job for which he is being employed. A man who has poor eyesight which cannot be corrected is not a good risk as a chauffeur. An applicant with arthritis in his wrists and fingers can do incalculable injury to himself as well as wreck the machine if he is expected skillfully to manipulate that machine. Too often, in order to avoid paying a few dollars for a physical examination, we put an employee in a hazardous occupation where physically or even temperamentally he is unfit, which results in the loss of hundreds of dollars. It costs real money to train men for specific jobs. This outlay is entirely lost if you find at a later date (sometimes through a catastrophe) that the worker is physically unfit to do the work. To have a specific notation on the medical chart that the worker has a rigid third finger on his left hand, saves many dollars when an accident occurs to the third finger of that hand, and later an evaluation must be made at the Compensation Board, as to the loss of function to this finger. Some years ago we had a case before the Compensation Board wherein the employee maintained that he had a loss of vision, to the extent of 20/50 in his right eye. Ordinarily this would have meant an award of about 25% loss of vision and proportionate payment therefor. We were able to produce the medical record which showed that on employment, the employee had 20/50 vision in that eye. Of course we didn't have to pay any award.

THE physician who performs the pre-placement examination must have a thorough knowledge of the business with which he is connected. He must understand the type of work, the specific requirements of each job and the hazards connected with them. In addition, this knowledge fortifies him in more readily ascertaining when to return the injured worker to his job. Proper placement of applicants, the immediate treatment given to injured workers and the early return of injured men to the job, have markedly decreased compensation costs. In fact, one industry in Brooklyn maintains that the entire cost of its medical program has been met by a corresponding decrease in insurance premiums. Surely insurance companies will decrease the premium when they know that they will not have to bear the cost of a hernia operation for an employee who had the hernia before he was employed.

A generally accepted estimate based on the experience of many industrial physicians over many years, indicates that competent medical or health service can cut the losses due to sick absenteeism and latent illness by about 50%. Since these losses on a nationwide basis amount to approximately 7% of total production, a conservative estimate of reduction in production losses due to illness would be about 3%. In these times, with a man earning around $11.00 a day this saving represents 33 cents per man day, or about $79.00 per man year, and, within reasonable limitations, considering the total number of employees involved in any particular enterprise, you can certainly make available to them a fairly complete medical and health service for considerably less than $79.00 per man per year.

A good industrial medicine program which includes all the elements to keep a worker healthy and efficient should not cost more than $22.00 per employee per year. Therefore the medical plan that can demonstrate that it is possible to cut the absence rate by two days per year would allow the company to break even. I am confident that more than two days per year can be cut from the absence rate when a competent medical organization goes to work.

Our current experience in the Consolidated Edison System, indicates a per capita cost to the company for comprehensive medical service for some 25,000 Mutual Aid Society members of approximately $40.00 per year. This plan is very extensive and includes treatment of the employee at the plant as well as at home, unlimited laboratory facilities, hospitalization with all necessary surgical or medical care, prescriptions, dental service and convalescent care. This may seem rather extensive and all-inclusive, but we definitely feel that by using all the available diagnostic procedures, we get an immediate and accurate diagnosis, are able to institute treatment promptly and get the employee back to his job much more quickly than if he were allowed to shift for himself, hoping that he is diagnosed properly, trusting that he is receiving the right treatment and praying that he will be alive to return to work in the near future. So many people when ill are prone to go to the corner drugstore and select medicine which helped Aunt Minnie when she supposedly had the same condition. A few days later they find much to their sorrow that it was not the same condition.

I stated previously that industry had a 2% loss of production due to inefficiency caused by dormant disease. We can easily realize that a man suffering with diabetes cannot perform all the functions of his job. His state of weakness and even dizziness not only causes a decrease in amount and quality of work, but also makes him a distinct hazard. Yet this diabetes syndrome can continue for several years before the condition becomes so severe that the worker is forced to see a physician. The same situation holds true for those suffering with high blood pressure, anemias, kidney conditions and many other chronic ailments. The availability of periodic health examinations would be a great factor in determining these conditions. We know that when chronic degenerative diseases are diagnosed in their incipient stage much can be done to arrest and even eliminate the condition. The worker can be restored to full usefulness

and high efficiency. We therefore not only will eliminate this 2% loss factor, but in addition, the employee will continue as a distinct asset for a much longer period of time. From a cost standpoint, the longer you can keep an efficient, skillful man on the job, the less it costs for training replacements to say nothing of results to the man himself and the community. For those of you who have pension plans, it just postpones paying pensions for that period of time.

THERE is another factor in the industrial health program which is of considerable importance in those industries where group life insurance coverage is a part of the employee benefit plan. Usually, under group life coverage, the employee pays a fixed rate premium regardless of age or physical condition. However, the insurance company computes the premium on the basis of normal percentages of healthy and unhealthy employees as well as on age. Therefore, the employer pays a varying amount from $6.20 per thousand for the 21 year old youth to $43.00 per thousand for the 55 year old man, although both man and boy pay the standard $6.20 per thousand. Now, at the year's end, a dividend is declared by the insurance company based on the mortality statistics of each insured group. This dividend is returned to the participating company and helps to offset those larger amounts ordinarily paid by the employer. It is not difficult to understand that these dividends can be large or small in direct proportion as good, indifferent or no medical service is provided by the employer for the benefit of the employees. The net result is that a good medical service provides in addition to the inherent benefits, the privilege of securing reasonably large amounts of group insurance at a low rate.

A VERY important phase of industrial medical work is that of preventive medicine. Aside from the usual voluntary periodic health examinations, it is wise indeed to have all employees who do especially hazardous work examined as to their present physical ability to do that kind of work. The fact that an individual had good vision in 1942 does not mean that he still has it today, or that normal blood pressure several years ago is still normal at this time. Seeking out those who have had physical changes, advising them on restorative measures and changing the work for those who cannot be helped, keeps a vital, vigorous and safe group constantly performing this type of work. Respiratory diseases are the basis for about 50% of all absences. There are many things that can be done to keep these diseases at a minimum. Health education as to communicability, proper diet, rest, inoculations, vitamin therapy, prompt treatment, all aid in keeping colds and their allies at a low incidence. Need I state that fewer colds mean more people at work. Many workers are undergoing treatment on a prophylactic basis. Quite commonly these treatments mean daily visits to some doctor's office, with consequent time off from the job. These treatments can be given by the plant doctor or the nurse under the direction of the private physician. The time element, comparatively, is a few minutes against a half day. The return to the employer in dollars and cents in these cases is definitely intangible but, if one has any imagination at all, he can see that it must be on the positive side.

All industry, large and small, must make a determined effort to keep employees healthy so that the maximum number of people are working at maximum efficiency most of the time. A constructive health program in industry is one of the greatest factors in building morale and maintaining or enhancing productivity. To maintain a high level of production, it must:

1. Keep its absence rate at the lowest possible level.
2. Maintain a high degree of efficiency in all its employees.
3. At first try, put men and women in jobs where they are physically and mentally capable of doing that job.
4. Keep compensation costs as low as possible.
5. Maintain a healthy shop wherein disease is not transmitted by workers or physical conditions.
6. Maintain life, vigor and skill for the maximum period of years.
7. By cooperating with the employee in keeping physically fit, obtain a high morale and extreme loyalty.

DOES it pay to do these things? Large industries have been following such a program for many years. They have had the opportunity to assay the results. The best indication of their survey is expressed by the fact that large industries are expanding their medical programs. If it pays dividends for large corporations, it should do the same for small organizations.

I do not hesitate for a moment to say that no matter how small a business may be, provision for a health program can be made and will pay dividends. Where the number of employees is so small that it would not be advisable to institute a full-time medical program, it is perfectly possible for several firms to band together and use centralized facilities. The cost need not be proportionately more than that in large business and the resultant advantages should be the same.

Industry—all industry—should not only consider that it has a responsibility for worker health, it should also be eager to take every possible step to obtain it. Emphatically, industry—all industry, both large and small—cannot afford to do otherwise.

A College Course on the Medical Basis of Accident Compensation
—As Taught at Swiss Universities—

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Medical Director, Swiss National Accident Insurance Office

MEDICAL schools in Switzerland require certain courses before the student is admitted to the final examination. A course on the Medical Basis of Accident Compensation figures among these compulsory subjects; not only is the student required to attend this course, but he also has to demonstrate his knowledge in this field at the final examination. Similar regulations are not imposed in any other country.

This regulation was adopted in 1914 at the request of the Swiss Medical Association, insurance companies, and several political parties. The demand arose from the added duties imposed on physicians by the then newly issued Federal Industrial Compensation Act. It was felt that this act required from the physician knowledge that he could not acquire during his clinical training and the then only optional course on the Medical Basis of Accident Compensation. Insurance practice is continuously increasing, and frequently the physician is put into the role of a judge, which steadily imposes new demands on him. He can live up to his task only if he has had sufficient training.

The college course on the Medical Basis of Accident Compensation does not cover surgery or internal medical treatment employed in cases of accident, but the young physician is informed of the special tasks he is to perform when handling insurance matters. The course deals, furthermore, with the legal and scientific relations between previous injuries and diseases, and accidents. The basis of this subject is, similar to the legal aspects of medical sciences, dependent on laws that happen to be in force. To be worthwhile, this course must summarize and coordinate the various medical problems arising from accidents and their relations to all the branches of medical science.

The main subjects of teaching are the relations between medical science and the respective provisions of the Industrial Compensation Act or the conditions of insurance of commercial accident insurance companies. Along with these problems the student is acquainted with the reasoning typical of lawyers. He is familiarized with the organization of the National Accident Insurance Office (Schweizerische Unfallversicherungsanstalt) and commercial accident insurance companies. The various accident reports and certificates which the physician is to fill in for the Insurance Office and the patients are discussed in considerable detail. The techniques of examination and consulting are analyzed, together with the estimating of the degree of invalidity. Case histories are presented of accidents that the students could not usually become acquainted with at medical schools and hospitals. The students learn of the various possibilities of the invalid's adaptation and adjustment to the condition brought about by the accident. They are informed of the influence of diseases existing before the occurrence of accidents upon the damage suffered. In the core of the course on the Medical Basis of Accident Compensation are the questions of basic correlations between an accident and a previously existing illness such as tuberculosis, osteomyelitis, hernia, varicose veins, diabetes, abortion, detachment of the retina, diseases of the brain, etc.

The course on the Medical Basis of Accident Compensation generally does not include problems of medical treatment of the injured. While these subjects are touched upon occasionally in this course, they are taught in detail in courses offered by surgeons, specialists of internal medicine, ophthalmologists, etc.

In view of the wide field to be covered by the course on the Medical Basis of Accident Compensation, the subject cannot be taught in great detail, and in general the student is given an outline only. The course can only achieve the desired results if the student already has had sufficient clinical training to gain a certain knowledge of the various diseases. Therefore, the course is usually taken toward the end of the medical education, i.e., immediately before the final examination.

It is of advantage to the insurance institutions as well as to the young physician if the ability to handle insurance matters correctly is acquired during the regular medical education and the respective experience does not have to be gained exclusively during the period of internship or the first independent practice. Besides, Switzerland still lacks a legal basis to compel young physicians to take post-graduate courses following the regular medical education.

Although Switzerland is a small country, five of its universities (at Zurich, Basle, Berne, Lausanne, and Geneva) offer a complete medical education. There is a separate, full professorship for the course on the Medical Basis of Accident Compensation at each of these universities. In addition, a lecturer (Dr. Lang) teaches on this subject at the University of Zurich and assists the regular professor at the final examinations. All these professors have an unusual amount of surgical experience, which is felt to be an advantage, since the majority of cases to be considered are of surgical nature. The course on the Medical Basis of Accident Compensation is never taught by a clinician, because it does not cover individual, special

branches of medicine, and one did not want to load with it the courses on surgery, internal medicine, ophthalmology, neurology, etc. The professor teaching the course on the Medical Basis of Accident Compensation must have a certain knowledge of the most important industrial production methods. In addition, he must be familiar with the mode of working of the more frequently chosen occupations. These qualifications can, as a rule, not be expected of a clinician (in Switzerland the head of a university hospital).

It is difficult to judge accurately the benefits derived from the course on the Medical Basis of Accident Compensation. It is certain, however, that the students generally demonstrate much knowledge of this subject at the final examination (State Board Examination). Physicians visiting from abroad frequently express their appreciation of the detailed, conscientious, and thorough reports that Swiss physicians send to insurance agencies. Undoubtedly, the majority of young physicians entering private practice recognize the peculiarity and importance of the services expected from them by the National Accident Insurance Office and commercial accident insurance companies. This realization alone is worth a great deal.

Small Plant Cafeteria

—Four Years' Experience at Precision Parts Corporation—

Four workers hospitalized in one week with gastro-intestinal upsets was enough! Something had to be done to insure that the men and women in the factory got good, wholesome nourishment at the lunch periods, and were not subjected to the ills that lie inherent in food poorly prepared. At the time many of the workers were eating lunch at near-by cafes and sandwich establishments. Obviously, factory management could not impose requirements of any kind on the operators of neighborhood eating establishments, so it appeared that the only way in which the situation could be improved was for the company to go into the business of preparing food. This was a courageous decision, because in-plant feeding facilities in small factories are uncommon owing, no doubt, to the fact that the managements of such plants have considered the cost, in view of the limited clientele, out of all proportion to the returns to be anticipated. But, profits nevertheless are realized from such ventures even though the gains may not be counted directly. The construction of a building suitable for a cafeteria was begun during the latter part of 1944; it was opened for business in February, 1945. The structure, 20 ft. x 40 ft. in plan, was built of wood, insulated on top, bottom and sides, and finished outside with roll-brick siding. There was no heat provided other than that from the gas-fired range which, thus far, has been adequate as the building has always been comfortable. In addition to the range, the cafeteria contains a 27 cubic-foot electric refrigerator, a two-gallon coffee urn, a gas-heated steam table, one cold drink ice box and seats for 40 people at tables. The building was erected by company employees and cost approximately $3,000 in the winter of 1944-1945; the equipment was purchased for $2,895. The cafeteria remains open until 4:00 P.M., and at any time between meal hours the workers may go for drinks, cigarettes, or candy, but each visit is limited to five minutes. Very few workers have abused this privilege; however, occasionally the attendant reminds a worker of the time limit. The prices compare favorably with those in other establishments, despite the limited patronage. Breakfast for example, consisting of a juice, one egg, two strips of bacon, toast and coffee, costs 46 cents, and for lunch, one meat, two vegetables, drink and bread can be had for 46 cents. And here the comparison with outside places ends for the meat is of the finest obtainable and the helpings are generous. A salad costs 15 cents and a hearty cut of pie, 15 cents. All pastries and breads are cooked on the premises. These are current prices; in 1945 they were less, for example, a meal then could be purchased for 35 cents. The management absorbs the deficit incident to operating the cafeteria and pays the man for eight hours work each day, but does not deduct the 30 minutes lunch time, nor the rest periods in morning and afternoon. This, management considers to be good business. "Why, we often hear the men discussing working problems during their lunch hour," said Fred C. Dance, Plant Comptroller. The men like the cafeteria. For example, on one occasion when the cafeteria was not to operate for the day the men asked that they be allowed to fix something rather than go outside. As a result coffee was made and canned chili heated and served with crackers. And Paul Harmon, president of the corporation, stated, "Former employees frequently drop in for a meal and some of our customers tell us they try to arrive about lunch time." The plant employment at the time the cafeteria was erected was about 150 and at one time during the war rose to more than 300. At present there are about 100 workers in the plant, 80% of whom eat in the cafeteria. Some of those who bring lunches say they are on special diets. Two women are required to prepare the food and maintain the place. Every customer must help, however, by returning empty dishes and tray to the serving counter. Customers also serve themselves bottled milk and soft drinks.

From *Tennessee Industrial Hygiene News*, January, 1949.

Ptomaine Food-Poisoning a Myth

GAIL M. DACK, M.D.,
Chicago

[NOTE: DR. DACK *spoke extemporaneously and informally, without notes. The following is the transcript of his remarks as given.*—ED.]

PTOMAINE poisoning is something we read a great deal about in the newspapers even today. During the last decade or so efforts have been made to get the term out of the medical school curriculums, but it is still present. I want to talk about what has been commonly called ptomaine poisoning; first of all to give you examples of some outbreaks of it taken from the literature of many years ago, and then come to what it is that is now replacing the old term ptomaine poisoning, and what it is that has a specific meaning with reference to illnesses formerly attributed to it.

The term "ptomaine poisoning" was coined back in 1870 by an Italian toxicologist by the name of Selmi. It was associated in those times with putrefaction, particularly alkaline extracts of protein decomposition.

In 1830 the comment was made "that certain articles of food had been frequently observed on the Continent to acquire a poisonous quality of a peculiar kind and in a way which chemists and physicians had not hitherto been able to name satisfactorily. Among these articles the most frequent are a peculiar variety of sausage and a particular kind of cheese used in Germany; but both in France and Germany bacon and ham have also several times been found to acquire poisonous qualities analogous to those which characterize the sausage-poison and the cheese poison. A very elaborate inquiry into an accident supposed to have arisen from spoiled ham has just been published. This work was by M. Ollivier, a Frenchman. His investigation set completely at rest the common notion that such accidents arise from the accidental impregnation of the meat with metallic poisons and he has not succeeded in discovering the real cause.

"In the instance which gave rise to his investigation the master of the family purchased a ham pie at a pastry cook in Paris and the whole family ate the meat of the pie the same day and the crust on the following day. Three hours after dinner the master of the house was seized with general uneasiness followed by cold sweats, shivering, violent pain in the stomach and frequent vomiting. Then with burning thirst, extreme tenderness of the belly so that the weight of the bed-clothes could scarcely be borne, profuse purging, and colic of extreme violence. His daughter, 27 years of age, and a child nine years old, were similarly attacked.

"A physician who was called to their assistance soon after they were taken ill, drew up a minute report of the symptoms in each of his patients and declared that they had a violent inflammation of the stomach which he was inclined to ascribe to natural verdigris or carbonate of copper having been communicated by the pastry cook's mold. In a few days all of the three recovered under an antiphlogistic treatment.

"About the same period several accidents of like nature occurred among the customers of this pastry cook and in consequence a judicial investigation was ordered. The shop being properly inspected, it was found that every operation was conducted with due attention to cleanliness. Chemical tests made of the meat and the paste separately and of the vomitus and stools revealed no trace of commonly recognized chemical poisons, arsenic, copper, antimony or lead."

As you know, we have had a lot of trouble in our day with cheese, with hams, with chicken gravies. I was on a Pullman in the South not long since, going to a medicolegal case, and I was seized with this type of food poisoning, and so were some of the others. In that case it was chicken a la king. Many different things have been involved: pastry goods, cream puffs, etc. The occurrence of illnesses from them is not new.

In 1879, Henry Leffmann, Lecturer in Toxicology in the summer school of Jefferson Medical College, called attention to the frequency with which cream puffs had been implicated in outbreaks of food poisoning. He wrote: "I have made chemical examinations of portions of cream puffs that have caused trouble, but have not found anything that could be assigned as the cause of the attacks."

If we look through the records we find dozens of outbreaks, some of them very large, from this type of poisoning. It is noticeable that the incubation period from the time of eating the food to the onset of symptoms was short. Ordinarily it may be two and a half to three hours. I don't know of anything that simulates this type of trouble; it is the type that has most commonly been referred to as ptomaine poisoning.

In 1884 Professor Victor C. Vaughan made the following statement with reference to food poisoning caused by cheese: "It is well known that cases of severe illness follow the eating of some cheese and, indeed, such instances have been observed in various parts of the world for the past 300 years. They are of frequent occurrence in the North German countries and in the United States. In England they are less frequently observed, while in France where much cheese is used we find no record of any such cases. In northern Ohio a few years ago the reputation of a large cheese factory is said to have been destroyed by the great number of cases of alarming illness occurring among those who ate of its product. In Michigan during the past

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six months nearly 300 cases of cheese poisoning have been reported."

In 1884 Dr. Vaughan observed that the old foul-smelling cheeses, such as Limburger and Switzer, are alkaline in reaction, and poisoning never results from their use. He performed the following experiments with samples of poisonous cheese: "I covered some bits of cheese with 90% alcohol, agitated thoroughly and filtered. The clear alcoholic filtrate when evaporated at low temperatures left a large residue of fatty acid with possibly some containing nitrogenous bases. Having ascertained that nothing could be learned by feeding the cheese to lower animals, I determined to experiment upon myself. I ate a piece of this alcoholic extract about the size of a hazelnut. It had a bitter, acrid taste and in 10 to 15 minutes there were marked constrictions and dryness of the fauces, much the same as experienced while under the effect of atropia. Later there was considerable nausea, and I could readily believe that a large amount would have caused vomiting. This experiment was repeated with the same result, and from it I concluded that the poisonous material, whatever it may be, is contained in the alcoholic extract. This would indicate a chemical poison and not a bacterial one. However, this chemical poison might be generated by the agency of bacteria.

"Microscopical examination of the opalescent drops already mentioned, or of water which had been poured upon the cheese and allowed to stand for a short time, revealed bacterium termo and spherical bodies from three-quarters to one micromillimeter in diameter and having a rapid, swinging motion. These spherical bodies are not the ova of small animals, for they are insoluble in ammonia hydrate. They may be micrococci or the resting spores of some bacillus."

Henry B. Baker, Secretary of the Michigan State Board of Health, in 1884 sent some of the cheese which had caused illness to Dr. George M. Sternberg. You remember that later he was the Surgeon General of the Army. He was the Army surgeon who at that time was stationed at Johns Hopkins University. He found that the fluids from the cavities of cut cheese on direct examination showed the presence of micrococci and no bacilli or other micro-organisms. Cultured in broth then incubated at 38° C for 24 hours, it contained only micrococci in pairs and in chains. Each of two rabbits inoculated subcutaneously with about two milliliters of the broth culture remained in good health. Rats and dogs fed the cheese developed no ill effects. A dog fed three milliliters of broth culture of the micrococci and subsequently 10 milliliters of an alcoholic extract of cheese remained well. However, Dr. Duggan, who assisted Dr. Sternberg with his experimental work, ate about 15 grams of cheese at 2:30 P.M. At 5:00 P.M., two and one-half hours later, he was attacked with nausea and vomiting and had one loose discharge from the bowels. He was not subject to similar attacks, and ascribed the symptoms to the cheese.

Dr. Sternberg concluded, "It seems not improbable that the poisonous principle is a ptomaine developed in the cheese as a result of the vital activity of the above-mentioned micrococcus or of some other micro-organism which had preceded it and had perhaps been killed by its own poisonous products."

The staphylococcus, which is the organism that Dr. Sternberg is referring to, was discovered in 1880 by Pasteur, although it was four years later when it was actually classified. So here is the organism related to food poisoning back in 1884. Nobody, however, implicated it even then, as you can see in Dr. Sternberg's report, "it is a ptomaine perhaps produced by the micrococcus." They had the idea, but it is a strange thing that nearly 50 years elapsed before this type of food poisoning became generally recognized. Why was that the case? We had lots of outbreaks. They were recorded in the literature. The staphylococcus was found along with them. For example, in 1894 a cow had died of vitulary fever and they found huge numbers of these staphylococci in the meat which had caused the illness of a very large number of people.

In 1906, Owen, up at Michigan, again, worked with dried beef which had made people sick in a few hours, just as I have reported for these others, and he found staphylococci in large numbers. They fed all sorts of laboratory animals and none of them was made ill.

In 1914, Dr. Barber, out in the Philippines, got sick every time he went to a particular farm. He was determined to find out what made him sick. By eliminating different foods, he finally discovered that it was the cream or the milk which had made him ill. But he was not satisfied with that. He went out to the dairy and milked the cows. He found that one cow had a quarter of its udder infected with mastitis, or garget,. as the farmers call it. He drew some milk from this infected quarter and drank it right away and nothing happened, but when he let it stand for four to five hours at 28 to 30° C, it became toxic and he and three other people who were working with him and who drank some of the milk became ill. He had found a staphylococcus in this milk and in the udder of the infected cow. But here was his demonstration in 1914, tucked away in the *Philippine Medical Journal*, where it stayed. In this country and all over the world nobody paid any attention to the staphylococcus in food poisoning.

The reason is rather obvious. In many of the early investigations when they would feed contaminated milk or meat or foods of any sort, which particular items of food had been associated with an illness, to experimental animals, the animals did not become ill. They remained healthy, and so, without a suitable animal to test as to whether the food was poisonous, there was nothing further done about it. The mere finding of large numbers of staphylococci did not mean a thing. I don't know how many of you remember your bacteriology. I doubt if you

recall much of it, but ordinarily, in teaching bacteriology, the teacher is familiar with staphylococci contaminating culture media. They are organisms present in a normal environment. Every one in this room has them in his nose and throat. They grow on the skin. They are a very common organism; they are present in our surroundings; we cannot get rid of them. Therefore, a bacterium as omnipresent and as common as the staphylococcus was completely ignored.

In 1930 we had been working, and so had many other laboratories, on the things that were ordinarily done. You either considered food poisoning outbreaks as manifestations of botulism or you didn't. Obviously, the symptoms would tell you whether it was or wasn't. If it wasn't, then everybody dumped it into the file of the paratyphoid organism, or what we now call Salmonella. There was effort expended looking for Salmonella or excluding botulism in most of our laboratories throughout the country.

WE WERE interested, at the University, in finding out whether some of these Salmonella produced poisons when they grew. We brought into our laboratory a Christmas cake that had made a doctor's family ill. This cake was baked here in Chicago, in one of our Italian bakeries, and given by a fond patient to his physician as a Christmas present. The physician, fortunately, didn't like cake, but the rest of his family did and they ate of it and every one of them was ill within about two hours. Ordinarily the substances that you get to examine in the laboratory come out of a garbage pail, or consist of some stools. But here was a nice ornately-decorated Christmas cake, and everyone who had eaten of it had become ill. We, like everybody else in those early days, fed it to all the laboratory animals we could find, and I spent all New Years Day looking for mercury and arsenic with no success. Finally we cut small portions of the cake and fed it to different individuals about the laboratory. One had the frosting, one the maraschino cherry on top, another the filler, and another the cake substance itself. The person who had the cake substance got desperately sick in about three hours, with vomiting, abdominal pain, diarrhea, and acute prostration. In this type of food poisoning prostration may be very severe, and in some individuals death may occur, although it is uncommon. Usually individuals feel all right within a short time.

Here we had the substance localized in the cake itself. We looked for bacteria, and we found three principal types. One of them was a yellow hemolytic staphylococcus. This we put into a fluid broth, and after it had been incubated for 72 hours we injected the culture into rabbits, and the rabbits had a profuse diarrhea and died. That didn't mean a thing to us, any more than what had happened with the ptomaines years ago. If you take protein decomposed products and inject some of them into animals they will get sick, and they may die, but you can feed them to animals or man without causing sickness.

If ptomaines were responsible for food poisoning, certainly a putrified food like Limburger cheese ought to be a cause of it, but you remember I just quoted Vaughan as saying that they never had any trouble with Limburger. Also we know that some of the food habits of people about the world are such that they prefer putrid foods, so that if there were ptomaines present or split protein products they would certainly have an abundance of them.

With this filtrate, we were not satisfied with just injecting it into a rabbit and having it die. You can do the same thing with a filtrate of the colon bacillus. So we fed this filtrate to some human volunteers, and one who got 25 cc. became desperately sick, with bloody mucous stools, vomiting, diarrhea and prostration within three hours after drinking the filtrate as such. That was a start then. This was 1930.

Following that, we received samples from outbreaks all over the country: cakes, custard-filled foods, ham, chicken a la king, all sorts of gravies, milk, ice cream, and what-not. At that time the point had been made that the only way you could really tell whether the poison was present was by feeding the suspected food in question to human volunteers. This at least called attention to the staphylococcus, and serious attention was given to this organism. Subsequently it was found that if you grew some of these staphylococci in a particular way they would produce a poison, which, if fed in large quantities (50 cc.) to monkeys—the Rhesus monkey, the ordinary one you see in the zoo—would make them vomit in anywhere from two to three or four hours.

This is the most common type of food poisoning we have, and it is one over which we don't have a good control. The best control is adequate refrigeration. If foods are adequately refrigerated, then the staphylococcus does not grow and produce its poison. Some strains of staphylococci do not produce this poison. We don't know how many of them do. There have been no really complete studies made.

During the recent war we had lots of outbreaks. We had 4000 cases at one time in one camp from bread pudding that had stood under the counter for 16 hours. To show the effect of incubation, in one Navy place we had an outbreak due to ham. The incubation period following the eating of the ham until the onset of illness was something like four hours. The cooks didn't know that this ham was at fault, so they ground it up the next morning and mixed it with scrambled eggs and gave it to the men again. That time some 300 or more were made ill, and instead of having a four-hour incubation period from the time of eating this material until the onset of the symptoms, the incubation period was two hours, and they were much more ill.

Up at Great Lakes we had 2,000 cases from ham that had stood in the galley too long. We had 1200 cases in another camp. So this type of

illness is something that occurs the country over. It is a very common type of food poisoning, and one that it is very difficult to do much about once it has happened. Thus, from a medico-legal standpoint, suppose a group should be made ill. They would get a piece of the item of food they think is involved, and if a few staphylococci were isolated from it, these could be grown under particular conditions to see whether they produce this poison that will make monkeys vomit or that will make kittens or cats sick if administered in a particular way, but still there may not be any poison in the food itself. Thus it is an extremely difficult problem, and what we are attempting to do at the present time is to determine the chemical nature of this staphylococcus poison. What is it chemically, and how can we detect it in foods? If we could detect it in foods, then it would be a relatively simple procedure to say whether any one particular food was concerned. It would be a great help in processing and in taking care of foods, to determine which methods were the best for handling the various items. One peculiar thing about this poison is that it is relatively heat stable. We don't know how heat stable, but we boiled some once for a period of 30 minutes, and then I fed 10 cc. of it to a volunteer and he was desperately ill. If it would stand boiling then it would be possible to cook a food that had the poison in it—and there have been outbreaks reported from such food—and not find any living staphylococci there at the time the bacteriological examination is made.

This type of food poisoning, then, is the type that has been most commonly spoken of as ptomaine food poisoning. Because "ptomaine food poisoning" is a meaningless term and it does not apply to any particular chemical, I think the quicker we can forget it the better.

New Drug for Alcoholism

A WARNING that untrue statements are being published about a newly discovered drug purporting "to cure alcoholism for a year with one dose" has been issued by Dr. Edwin G. Zabriskie, Professor Emeritus of Clinical Neurology at Columbia University College of Physicians and Surgeons, and Consultant Neurologist to the Neurological Institute of Columbia Presbyterian Medical Center. Dr. Zabriskie spoke as Chairman of the newly formed Organization Committee for Research on Medical Treatment of Alcoholic Patients, which is developing plans for the investigation of a drug known as tetraethyl thiuram disulfide, now being used in Denmark and Sweden for the treatment of alcoholics. "The Committee feels that the toxic properties and therapeutic value of this drug have not been fully explored," he stated. "Improper use of the drug may prove detrimental to the development of a sound treatment which would benefit hundreds of thousands of alcoholics. It has been known for some time that this tetraethyl compound will cause an intolerance for alcohol. The chemical is used in vulcanizing rubber. About two years ago, employees of a rubber company in Akron, Ohio, were exposed to air containing the drug in powdered form. It was later reported that some of these employees developed an intolerance for alcohol which made it impossible for them to drink any alcoholic beverage without experiencing nausea and other unpleasant symptoms. How long this condition continued is not known. This observation led to an investigation of the toxicity of tetraethyl thiuram disulfide and other dithiocarbamic acid derivatives." The research was supervised by H. Brieger, M.D., Associate Professor, Department of Preventive Medicine, and Director of Industrial Medicine, Jefferson Medical College, Philadelphia. Dr. Brieger's report clearly indicates need for further investigation of this tetraethyl compound before we shall know whether it is safe to use the drug in the treatment of alcoholics. Dr. Brieger is a recognized authority on this drug, and a member of our Committee. According to the clinical reports of Danish physicians, the results of treatment with this drug are sufficiently encouraging to justify additional research, which should be completed before the drug is released by the U. S. Food and Drug Administration for general use by physicians in the treatment of alcoholics. Dr. Zabriskie quoted the following from a clinical report in the October 21, 1948, issue of *Ugeskr. laeger:* "Tetraethyl thiuram disulfide is extremely effective in stopping the alcohol intake of patients, but medical treatment must be followed by an intense psychotherapy aiming at the social rebuilding of the patient. This suggests that the value of any drug will probably depend upon the ability of the attending physician to deal with the mental habits and environmental problems of the patient. It has long been recognized that the discovery of a harmless drug which would cause an intolerance for alcohol would be of great value in the treatment of alcoholics. The Committee, therefore, wishes to investigate this drug without delay. It must appeal to people who are interested in the prevention and treatment of alcoholism for the funds required to finance this important work. The total cost should not exceed $50,000, and research will begin as soon as $25,000 has been obtained."

Surgery of Gastric Ulcer

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EVERY discussion of gastric ulcer should emphasize that it is impossible to distinguish between a gastric or a duodenal ulcer on the basis of symptoms and the results of routine physical examination. It is only by means of a roentgenological examination of the stomach or duodenum that the site of the ulcerating lesion can be determined. Gastroscopic examination will permit visualization of most but not all ulcerating gastric lesions, but because the gastroscope cannot be passed through the pylorus with accuracy, duodenal ulcers cannot be seen through it.

Why is it important to know whether the "peptic ulcer" is in the stomach or duodenum? First, since there is a 20% chance that a gastric ulcer may be malignant there is risk in allowing it to remain; even though the symptoms may temporarily subside and the niche of the ulcer may seem to disappear roentgenographically, the ulcer may be found to be malignant later on and then it is sometimes inoperable. Second, although in recent years at the Mayo Clinic we have advised a medical regimen in about 85% of the cases of uncomplicated duodenal ulcer and surgical treatment in 15% of the cases of duodenal ulcer, we have recommended removal of the chronic gastric ulcerating lesion in 60 to 70% of the cases. The operation of choice is a partial gastrectomy with the ulcer included in the resected portion of the stomach; this was done last year at the clinic in 116 cases with a surgical mortality rate of 0.9%. Partial gastrectomy was performed also in an additional 25 cases in which gastric and duodenal ulcers were present simultaneously; one death occurring in this group. Thus partial gastrectomy was performed in a total of 141 cases with gastric ulcers, with a surgical mortality rate of 1.4%.

In clinically indistinguishable benign gastric ulcer and malignant gastric ulcer, the symptoms and the roentgenographic appearance of the ulcers may be similar, and free hydrochloric acid may be present in the stomach. Under these circumstances treatment of an ulcerating carcinoma other than by surgical removal always has a tragic end.

In a study made some years ago by Gray, Priestley and myself of all the patients operated upon at the Mayo Clinic for cancer of the stomach, we learned that one-third had symptoms of ulcer, and that these were in 28% the first symptoms. But of serious consequence was the fact that four-fifths of these patients with ulcer symptoms had been placed on a medical regimen with relief of symptoms and an otherwise apparently effective response. The corollary of this is that all patients with a history of ulcer should have a roentgenologic examination of the stomach and duodenum. If a gastric ulcer is present and if it does not heal properly on a medical regimen or if it recurs, the patient should be given the benefit of surgical removal of the lesion, not alone because of the chance that it may be malignant, but also because the possibility that a chronic gastric ulcer will heal on a medical regimen is very small indeed. Moreover, the results of removal of the lesion by partial gastrectomy are excellent. The patients are able to eat and live normally as far as their stomachs are concerned. I have never seen a recurring gastric or a gastrojejunal ulcer after an adequate partial gastrectomy and removal of the ulcer. Therefore, since the lesion may be malignant, since excellent results are obtained by removal of the lesion as a part of the operation of partial gastrectomy and since the surgical risk is low, my colleagues and I as well as most other surgeons favor this procedure over any other.

RECENTLY interest has been revived in the use of vagus nerve resection in the treatment of various types of ulcerations occurring in the stomach and duodenum. I have performed this operation on 77 selected patients for whom I thought the procedure was indicated up to January 1, 1948: a particular indication has been recurring ulceration after partial gastrectomy for duodenal ulcer. Also, I have used the operation in combination with other well-recognized procedures, such as gastro-enterostomy and partial gastrectomy. There has seemed to be little indication for its use in the treatment of chronic gastric ulceration.

In this group of 77 patients there were seven with gastric ulcer, in two of whom the ulcer was so large that it was thought advisable to remove it for microscopic examination; in the other five cases the gastric ulcers were so small and the likelihood of malignancy seemed so remote that vagotomy was thought to be justified. In two of the five patients who underwent vagotomy large recurring perforating gastric ulcers developed which necessitated subtotal gastrectomy, following which the patient was completely relieved of his ulcer symptoms. In both of these cases the results of insulin tests were negative. This test is one in which from 10 to 30 units of insulin are injected intravenously in order to depress the patient's blood sugar to a value below 40 mg. per 100 cc. It is theorized that during hypoglycemia the gastric glands are stimulated by the cerebral cortex so that a rise in gastric acidity occurs unless the vagus nerves have been divided. A negative result, therefore, is one in

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which the gastric acidity does not increase when the patient's blood sugar has been reduced to a value below 40 mg. per 100 cc. Such a result has been assumed to indicate that all branches of the vagi have been cut.

On other occasions I have questioned the accuracy of this test when I have found that patients in whom the results were positive had about the same incidence of motility disturbances and reduction of gastric acidity as did patients in whom the results were negative. Also, my unsatisfactory results as regards proved and suspected recurrence of ulcer have been, for the most part, in the insulin-negative group.

MOREOVER, recently I operated upon a patient in whom a recurring duodenal ulcer had developed after an inadequate partial gastrectomy in which the end of the stomach was sutured to the end of the duodenum, a Billroth I anastomosis. After this operation evidence of recurring ulceration developed and it was reported by the patient's doctor in his home community that a vagotomy had been performed. My colleagues and I obtained negative results with the insulin test but noted evidence of a large ulcer in the posterior wall of the duodenum. At operation I removed all but one-third of the stomach, including the part of the duodenum containing the duodenal ulcer in the tissue removed. There was an intact, large vagus nerve which had not been severed at vagotomy. I removed a portion of it in the hope that this procedure along with the Polya type of operation which I performed would prevent recurring ulceration. Yet the results of the pre-operative insulin test were negative.

In the five patients whose gastric ulcers were small, vagotomy has relieved their symptoms; however, one patient continues to have roentgenologic evidence of a crater ulcer of the stomach (he is returning to have the ulcer removed) and another has the same degree of gastritis, as shown on gastroscopic and even on roentgenologic examination, as he had prior to vagotomy.

Approximately 20% of ulcers which, by all tests prior to operation, seemed to be benign, on microscopic examination after their removal are proved to be malignant. Partial gastrectomy with removal of the gastric ulcer is an operation that gives excellent results and an exceedingly low mortality rate of approximately 1.5%.

Approximately one-third of the patients operated upon for malignant lesions of the stomach have given a history of early benign, ulcer-like dyspepsia and four-fifths of these have responded so well to a medical regimen that the recognition and treatment of the malignant gastric lesion was delayed many months.

Vagotomy alone has no place in the treatment of gastric ulceration (1) because the lesion may be malignant, (2) because of the high rate of recurrence even after excision of the ulcer and vagotomy, and (3) because, although vagotomy may relieve the symptoms of ulcer, the ulcerating lesion may persist and hence given rise either to sudden hemorrhage or unsuspected perforation.

Blood-Type Index in the Plant

WITH little more than the flick of an index file, Charles H. Belsey & Co., Beloit, Wisconsin, can turn up not only the name of a willing employee blood donor but his blood type as well. The firm started recording blood types after it found that requests for emergency transfusions from the local hospital or plant dispensary sometimes took as long as an hour to answer. The bottleneck wasn't in finding willing donors, but in matching blood types. To save time and expense, all veterans employed by the firm were urged to bring in their service "dog tags" on which their blood types are recorded.

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Industrial Accidents and Peripheral Vascular Diseases

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VARICOSE ULCERS: The growing interest in peripheral vascular diseases emphasizes the close relationship between varieties of trauma and serious complications in the extremities. Most common of these is the appearance of varicose ulcers of the leg following slight trauma ranging from a mere scratch to a severe blow. It must be remembered that the tissues of the legs where varicose veins have been present for a long time are also usually affected with a chronic mycotic infection of the skin. The combination of poorly nourished tissues and skin infection is particularly susceptible to the development of a serious ulcer following almost any form of trauma. Improper treatment usually results in prolonged disability, chronic swelling of the leg, pain and discomfort and failure to heal the ulcer. Experience with these cases over a period of 25 years has convinced me that ambulatory treatment of varicose ulcers of the leg is unsatisfactory from many angles. Nothing can take the place of complete bed rest to overcome the effects of edematous tissue plus infection, which are the two factors involved in preventing proper healing. For this reason it is obligatory that all cases of unhealed varicose ulcer, whether or not they are initiated by trauma, be placed in the hospital immediately. Home treatment is unsatisfactory, as patients will run out of bed at the slightest provocation.

After 12 hours of proper bed rest any edema of the extremity that may have been present disappears completely, as evidenced by wrinkling of the skin of the leg and foot. This method of reducing edema is superior to pressure bandages used in ambulatory treatment.

The next most important factor in treatment is combating the local infection in the ulcerated area. This is best accomplished by the use of fungicidal agents and daily dressings with a bland ointment. My procedure consists of irrigating the ulcer with hydrogen peroxide, followed by careful wiping of the surrounding skin with ether, which may also be poured over the open ulcer to dissolve fatty accumulations. Following this a fungicidal powder* is lightly dusted over the ulcer and surrounding skin. A thin layer of boric acid ointment on gauze is then applied, followed by a snug fitting gauze bandage. If there are any large varicose veins in the immediate vicinity of the ulcer they require obliteration by the injection of 1 cc. of 3% Sotradecol.** If indicated, resection of the internal saphenous vein is also beneficial.

Attention to the varicose vein situation is important only as a factor in the prevention of recurrence rather than as an active form of treatment. With this method ulcers that have been treated with ambulatory methods for periods of a year or longer have healed completely within 10 days to two weeks and have remained healed during many years observation. In one case a claimant was collecting compensation, and medical expenses had been incurred by the carrier for over two years, during which time ambulatory treatment had been carried out by a competent surgeon. By admitting this patient to the hospital and carrying out the above daily routine, complete and permanent healing was secured within eight days.

The use of anti-biotics locally is usually unsuccessful. Over-treatment with a variety of ointments and sulfa powders has, in many instances, resulted only in chemical irritation and enlargement of the ulcer. In one case a multiplicity of chemicals had caused such alarming irritation and spreading of the ulceration that amputation of the leg was considered by the surgeon. Bed rest and vaseline gauze produced healing within four days. Wet dressings cause maceration of skin and should be avoided.

GANGRENE: It is interesting to note how many cases of leg amputations for gangrene have resulted in delayed claims for compensation. After the leg has been removed the patient may suddenly recall that the gangrene preceding the amputation was produced by some insignificant trauma, in some cases ante-dating the amputation by five or six years. Insurance carriers are frequently plagued by such cases, some of which are legitimate while others are obviously not.

It is admitted that all cases of pre-existing arterial insufficiency in the extremities, as in Buerger's disease or arteriosclerosis obliterans, are particularly susceptible to the development of gangrene if subjected to minimal trauma which would not be serious if the circulation were normal.

It is surprising to note how many prospective employees with advanced arterial disease of the lower extremities slip through physical examination undetected, in occupations where such a disease would be a serious hazard. This is undoubtedly due to the fact that the examining physicians have not been sufficiently trained in the detection of arterial disturbance. A simple test for detecting arterial insufficiency in the lower extremities consists of having the patient elevate the legs to an angle of about 45° while in a recumbent position. The feet are then flexed and extended rapidly at the ankle joints and the plantar surfaces are observed. If ischemia should develop, this is conclusive evidence of organic

*Desenex in boric acid powder base, supplied by Wallace & Tiernan. **Wallace & Tiernan.

arterial insufficiency and the degree of the pallor is proportioned to the extent of the occlusion.

Gangrene of the toes or of the feet may be ascribed to direct trauma or may, in rare instances, be the result of trauma to a main artery in some remote part of the extremity. For instance, a direct blow in the popliteal region may be the exciting cause of gangrene of the toes or feet. Similarly, a severe blow in the groin or in Scarpa's triangle or in the calf of the leg may also traumatize the underlying main arteries sufficiently to cause thrombosis and gangrene.

In judging the question of causal relation in these cases the time element plays an important part. While no arbitrary time limit can be established, experience indicates that gangrene developing within three months after trauma, either direct or indirect, can be ascribed to the injury. In longer periods causal relation is extremely doubtful and should not be considered probable.

In judging the validity of claims with gangrene it must not be forgotten that many cases, particularly in diabetic or in any form of arterial disease in the extremities, arise spontaneously, without trauma, as a result of mycotic infection of the toes or are particularly prone to occur in the interdigital spaces and in locations where corns and calluses are located. These cases comprise by far the great majority of peripheral gangrene. In many of these the patient erroneously ascribes the development of the gangrenous condition to some imaginary trauma which may become increasingly important to the claimant as the story is repeated to an attorney. In many instances these cases can be disproved by careful description of the location of the original infection or gangrenous spot, especially noting whether there is any anatomical relationship between the initial gangrene and the site of the injury. Many claims for loss of a limb have been paid unjustly in cases where the entire illness originated in a simple, spontaneous infection erroneously ascribed by the claimant to an imaginary accident.

Modern methods of conservative treatment of gangrene have greatly diminished major amputations, with the resulting savings in compensation. It is therefore essential that industrial surgeons be familiar with these conservative measures. As a result many claimants can be restored to gainful occupations, even though they have lost one or more toes, while loss of an entire extremity usually means total and permanent disability.

It is important to note that trauma to main arteries in the extremities may not always lead to gangrene. Extensive thrombosis in the major arteries, occurring either as the result of direct trauma or of severe and unusual bodily strain may deplete the arterial circulation in the involved extremity to such an extent that partial or total disability for a long period of time follows. This is usually expressed by severe symptoms of intermittent claudication and other disabilities short of gangrene.

EXPOSURE TO COLD: The patient with pre-existing arterial insufficiency in the extremities is susceptible to exposure to a cold environment to a much greater degree than an individual with normal circulation. Workers in butcher shops or refrigerated food compartments, as in ship storage rooms, or employees in street cleaning departments of cities are all candidates for disability if the circulation in the extremities is deficient. Careless pre-employment physical examinations will result sooner or later in expensive claims. In most cases the exposure to cold causes severe vasospasm followed by permanent occlusion in the arteries. In some this may go on to gangrene with loss of digits. Again, conservative treatment is indicated, without resort to hasty major amputations.

AXILLARY AND SUBCLAVIAN VEIN THROMBOSES: This syndrome is now well recognized and can be attributed to trauma in the majority of cases. It is usually brought about by lifting excessive loads or by sudden strains induced by pushing or lifting heavy objects. The mechanism appears to be a tear in the intima of the axillary or subclavian vein, resulting in extensive thrombosis. This is usually painful and causes swelling of the arm with dilatation of the superficial veins of the forearm. In some cases a pulmonary embolism follows which may cause infarction with chest pain and hemoptysis or, in some cases, the embolism may be large enough to cause instant death. Anticoagulant therapy is indicated in these cases as soon as the diagnosis is made. Disability may be prolonged and total, although in some cases occupations involving the lower extremities only may be allowed.

RAYNAUD'S SYNDROME: The increasing use of electrical vibrating tools and pneumatic hammers has produced a form of Raynaud's syndrome of the fingers and hands which may cause total disability. The diagnosis of this condition is easy as the patients complain of the usual play of colors in the fingers from ischemia to extreme redness and also have pain, numbness and weakness in the hands. Evidence of this condition indicates immediate change of occupation. Treatment is usually unsatisfactory although spontaneous improvement usually occurs with change of occupation.

SUMMARY: Pre-existing arterial disease in the extremities can be seriously aggravated by trauma, either direct or indirect. Recognition of the underlying atrerial disease in pre-employment examinations will indicate avoidance of occupations hazardous to this type of individual.

Erroneous claims can arise from imaginary trauma to extremities damaged by spontaneous infection.

Conservative therapy of various forms of gangrene should be given a fair trial before major amputations are considered.

Ambulatory treatment of varicose ulcers is usually unsatisfactory and unnecessarily costly.

A New Approach to the Problem of Impaired Health

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MOST sickness does not come on suddenly. It has been developing over a period of time varying from months to years. Therefore, what every individual needs is a health examination to detect causes of impaired health at a time when they can be corrected. Simply to identify and treat disease is patchwork whether the patient is superficially examined or given "the works." It is a question only of degree. Both are inadequate because the patient has to be sick before he receives adequate care that will make him well.

A true health examination is not now available. If a patient needs or seeks a health examination, he goes to his physician and is given an examination to detect disease by a physician trained in medical school and hospital for that special purpose. If the physician finds no disease, the patient is assured that he has no sickness and no cause for worry. If he insists that he is not well, he is given a tonic or mental treatment that may prevent him from taking health measures which otherwise his own common sense might lead him to do.

THE health examination is made to detect the physical signs of disease and the health habits in the daily program of living that are faulty because they deprive the patient of the essentials of health; namely, fresh air and outdoor sunlight, proper food and food habits, regular exercise and adequate rest. These habits are identified by checking the patient on the 20 faulty health habits most commonly found and verifying them by checking up his program of activities for every hour, from the time of rising until bed at night, and his food habits by means of an exact list of the amount and kind of food taken in a 24-hour period.

The average person has from one to nine of these habits which are serious because no person can be in optimum condition who habitually transgresses the fundamental laws of health.

Nature provides an immunity to many physical defects, but no immunity to faulty health habits that transgress her laws. She exacts her penalty to the last degree by impaired health and sickness.

By this basic examination, the following data are obtained:

(a) Evidence in the family history of disease of the circulatory and nervous systems, of tuberculosis, diabetes, cancer or other affections.

(b) History of past illness likely to recur.

(c) Faulty health habits in work and play.

(d) Faulty food habits as regards amount of calories habitually taken, unbalanced diet, irregular meals and faulty mastication.

(e) A physical examination that not only detects actual disease, but also physical defects that may cause disease.

This health examination is a screening test. Those found to need medical or surgical care are referred to their own physicians and dentists, thus determining for the patient whether he needs such services. In hospital clinics it prevents the confusion and waste of time consumed by referring the patient from one specialist to another. It coordinates the work of physical educator, dietician, mental hygienist and social worker by providing them the basis of all successful work, that of an accurate diagnosis before giving treatment.

TO PROVIDE this health examination, a physical fitness clinic is necessary, consisting of a thoroughly trained physical fitness worker, a physician part-time, and a secretary.

This unit can examine approximately 2000 patients a year, giving 55 minutes to each patient and allowing for two to three return visits per person.

The results obtained are an approximate reduction of 45 to 50% in days off from sickness, with a marked improvement in efficiency, well-being and morale.

About 30% of those examined are referred to their own physicians for medical treatment and a similar number to their dentists.

An average of more than three serious faulty health habits per patient is found. The patient is interested to correct them when their significance is explained and he has been informed how he can best correct them in his daily program of living.

The work of this clinic does not interfere with the medical and surgical work being done in an industry, but coordinates with it and makes it more effective.

The physical fitness clinic is a happy clinic because all are getting well. Their improved health leads them to return until they obtain a higher standard of health.

Better health cannot be obtained except through the patient's own efforts. The clinic helps the patient help himself.

IN A recent demonstration, 735 executives and employees of the Blue Cross were asked, "Have you any health habits that impair your health?" Only five answered in the affirmative, yet when their daily programs of activity were checked, including the time when not at work, an average of 3.1 faulty habits was found. When the significance of these faulty habits was explained and suggestions were made for their correction, they made a total of 2822 return visits for help in correcting them.

Eighty-eight cases in the danger zone of overweight lost from one to 28 pounds—a total of 574 pounds.

Eighty-eight cases in the danger zone of underweight gained from one to 15 pounds—a total of 247 pounds.

Fourteen patients with systolic pressure ranging from 150 to 210, were found at the end of the period of their return visits to have reduced their systolic pressure an average of 20.

Of the 735 applicants examined, 110 had no physical defects aside from overweight and underweight. None was entirely free from faulty health habits.

Twenty-seven per cent were referred to their family physicians, and 17% to their family dentists.

A check-up of their 24-hour period of activity showed that faulty health habits were occasioned chiefly by conditions outside rather than during working hours.

THIS new approach to the problem of impaired health has been remarkably successful wherever tried because it is based on the age-old principle of making an accurate diagnosis of the causes of impaired health before giving treatment.

Medical work is corrective, but most sickness can be prevented—an important consideration at this time of scarcity in doctors, nurses and hospital beds.

The cost of a physical fitness service is relatively small because the bulk of the work is done by a lay person—the physical fitness worker. The employer is justified in assuming this expense because, to the cost of days off for sickness, must be added the loss from lessened efficiency, for when health is impaired the higher powers are first affected—judgment, initiative, endurance and personality. This loss is most evident among the higher paid executives on whose efficiency the success of the industry depends.

Announcement

BREAKFAST MEETING, Wednesday, April 6, 8:00 A.M., Book-Cadillac Hotel, Detroit, Michigan.

This meeting will be held to discuss the formation of a Section of Restorative Surgery, with particular emphasis on Surgery of the Upper Extremity, including Surgery of the Hand.

All members and guests of the AAIP&S are invited. See announcement at Registration Desk.

The Ambulatory Treatment of Leg Ulcers with Pressure Bandages

OTTO MEYER, M.D.,
New York

VERY few authors have described the fundamentals in the treatment of leg ulcers so concisely as Arana-Soto recently did in this Journal (17:4, April, 1948). He called attention to some highly important factors which are not generally known. These factors are very essential for the effective treatment of leg ulcers.

He believes that phlebitis is the most common cause of leg ulcers.

He points out that varicose veins are responsible for the leg ulcers only in a small number of patients and that they only aggravate the ulcer.

Arana-Soto does not recommend treatment of varicose veins before the ulcer has healed. He states: "Varicose veins, even if directly responsible for the ulcers, are treated after complete healing of the ulcer. Treat the ulcers first. Varicose veins are treated later." He says further that vein ligation is usually not necessary to achieve very good results.

He stresses the importance of bandaging the legs with even pressure from the base of the toes to the knees. The bandage has to stay on firmly and has to be changed when it gets loose. He states further: "If poorly applied it is worse than no bandage at all."

He recommends plenty of walking and avoidance of standing postures.

IN MY practice, limited to phlebology, I have treated during the last 20 years over 3,000 patients with leg ulcers on similar principles and have stressed in numerous papers as early as 1932 that the most important factor in the treatment of leg ulcers is the removal of edema.

Boyd says in his book "Surgical Pathology" (1947): "This form of ulcer (ulcus cruris) is due to the tissues becoming water-logged, as a result of which their resistance to infection and trauma becomes greatly impaired so that necrosis of the surface readily occurs. The ulcer will not heal until the circulatory disturbance has been rectified."

Venous edema is produced by impediment of the venous return in the deep veins proximal to the edema. The obstruction in the deep veins (phlebostenosis) is caused by inflammatory swelling of the endothelium (endophlebitis) or by thrombophlebitis. The inflammatory swelling of the endothelium which narrows the lumen is later replaced by proliferative tissue. Insufficiency of the valves is a regular occurrence in deep phlebitis and an important factor as the cause of edema. Another factor, not generally mentioned in the literature on phlebitis and thrombophlebitis, is the spasm in the wall of inflamed veins (venospasm). Venospasm, by narrowing the lumen of the vein, is apt to interfere also with the return of the venous blood.

The simplest way to combat venous edema is the application of pressure. The external circular pressure exerted by snugly fitting bandages around the leg, increases the pressure within the edematous tissue fluid to such an extent that the pressure in the tissue fluid becomes higher than the pressure within the venous end of the capillaries and the venules where the reabsorption of tissue fluid takes place. As a fluid always moves from a point of higher pressure to a point of lower pressure, it is obvious that the reabsorption of tissue fluid into the veins is promoted by external pressure of the bandages.

Edematous tissue has the appearance of sponge-like tissue. The histological illustration of Mason and Allen gives the impression of a sponge. It is interesting to note that English authors like the famous London clinician Critchett over a hundred years ago referred to an edematous leg as a "spongy leg."

Just as a fist presses water out of a sponge, the compression bandage squeezes the superfluous tissue fluid out of the congested tissue into the venous capillaries and venules, and also into the lymphatic vessels. The decongestion relieves the pressure within the tissue and thereby the mechanical compression of the arteries and arterioles. This decrease of tissue pressure makes it possible that oxygen can now be carried to the asphyxiated tissue in the ulcer region. Compression bandages remove the stagnant anoxia which prevents a leg ulcer from healing.

I have used in my practice for 20 years the combination (contura plus pressoplast) pressure bandage with good results. It is easy to apply, does not necessitate shaving, and is easily removed. It is the most comfortable bandage for this purpose, and in the long run the most economical bandage, as it gets the quickest results.

Before I apply the combination pressure bandage, I cover the ulceration and the irritated skin with gauze spread with a suitable ointment.

The moist contura bandage is soothing and antiphlogistic. Moreover, moist bandages at body temperature attract histiocytes and promote their activity, as Masuda has shown in experiments. Histiocytes act as scavenger cells (macrophages), engulf bacteria and the debris, and carry them through the lymphatic vessels to the lymph glands.

The pressoplast bandage, snugly and evenly applied, offers a firm counterpressure against the contracting muscles. Light bandages and elastic stockings lack this firm counterpressure, and are therefore useless in combatting edema. A pressure bandage, applied snugly to the contour of the leg, exerts a firm grip for the contracting muscles which squeeze the venous blood into the direction of the heart.

As soon as the edema goes down considerably, the bandage becomes loose and annoys the pa-

tient, because then the bandage does not exert even pressure any more and is apt to wrinkle and cut into the skin. Therefore, as soon as a bandage becomes loose, it has to be replaced with a new snugly fitting bandage.

For details of the treatment of phlebitis, thrombophlebitis, and thrombosis with the combination (contura plus pressoplast) pressure bandage I refer to my paper in *Surgery* which was also abstracted in the "Yearbook of Surgery 1947" on page 137. Day and Schmidt reported also good results in the ambulatory treatment of phlebitis with these bandages.

Periostitis, which is often present with leg ulcers, heals promptly under the pressure bandage.

Ligation and injection of varicose veins are absolutely contra-indicated in the presence of phlebitis in the deep veins. Nobody would think of tampering with the varicose veins of the caput medusae when the cause is an obstruction of the portal vein system. In 1933 I warned against removal of collateral veins which look like varicose veins in the presence of deep phlebitis. Since then I have seen many cases of leg ulcers which were caused by ligation or obliteration of varicose veins in the presence of deep phlebitis. In the treatment of leg ulcers we have to differentiate sharply between primary and secondary varicose veins. Primary varicose veins are due to inherited weak connective tissue and coincide often with other symptoms of weak connective tissue (flat foot, knock-knee, varicocele, hemorrhoids, pendulous breast, and hernia). Secondary varicose veins are produced by obstruction in the deep veins and are a wise institution of nature to provide detour channels when the deep veins are obstructed.

Homans states in his book "Circulatory Diseases of the Extremities": "Many practitioners upon seeing something which appears to be a varicose ulcer, seek out any vein in the vicinity and inject into it a sclerosing solution. By so doing, they merely increase the local inflammation and aggravate the sore. Postphlebitic induration and ulcer follow only a deep thrombophlebitis. No enlarged visible veins need be associated with them. However, in a minor proportion of cases a number of superficial veins seem to become enlarged, as collaterals, during the obstruction of the deep vessels and afterwards become varicose."

Birger states in his book (1947): "According to Allen, Barker, and Hines, combined ligation and injection have little prospect of contributing to the reduction of the edema. I readily concur with both these opinions, and in addition I would add that in several of my cases the case history indicates that ligation had previously been carried out with a resultant increase in the edema and other troubles. I have no personal experience with other forms of operative treatment and shall not discuss them here. In my opinion there is no great need to operate, as one can as a rule manage with the conservative compression treatment."

Palpation of the deep veins with the surrounding muscles relaxed, especially in the calf, is the most reliable test to show if the deep veins are inflamed or not. Healthy veins, e.g., dorsal hand veins, do not hurt on pressure.

After the deep veins have been found to be free from pain on deep palpation, the treatment can be stopped. In order to prevent a swelling in rebound (reactive swelling) of the leg after leaving off the pressure bandages, it is advisable to remove the pressure gradually. This is accomplished by applying a three-inch wide presso bandage for about a week after the phlebitis in the deep veins has healed.

Varicose veins, primary or secondary, can then be easily removed by injections after the phlebitis has healed.

It is always advisable to have oral focal infections removed as they often cause an endophlebitis angustans universalis.

Any practitioner can treat leg ulcers successfully in this relatively simple manner. A little experience will enable him to master the technique in a short time.

Physicians find great satisfaction and gratitude from patients whom they successfully and permanently relieve of painful leg ulcers.

SUMMARY: The key to successful treatment of leg ulcers is to remove the edema first with pressure bandages, and plenty of walking.

Varicose veins should be treated *after* the removal of the edema and *after* restoration of the inflamed deep veins.

Ligation and obliteration of varicose veins are contra-indicated as long as the deep veins are inflamed.

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Problems in the Control of Occupational Cancer

W. C. HUEPER, M.D.

IT IS OBVIOUS that occupational cancer presents an increasingly serious health problem in the United States, as it does wherever industrial processes proliferate and men and women are brought into intensive and prolonged contact with occupational carcinogens. Nevertheless the subject has attracted relatively little attention from industry, labor, public health bodies, or the medical profession. Sufficient data have been accumulated, it is believed, to indicate the extent of the problem and to call for aggressive control procedures.

Factors Responsible for Lack of Interest

INDUSTRIAL MANAGEMENT: The limited publicity which occupational cancers and their causative agents have been given has left considerable portions of industrial management in complete ignorance of the existence of such sequelae to certain industrial activities. Furthermore, the general uncertainty prevailing in regard to the etiology of cancers in general tends to create a reaction of scepticism concerning the mechanism of their actual occurrence. Thus the reluctance of some members of industrial management to accept any claims as to the presence of occupational carcinogenic hazards in their plants and operations is a natural reaction of persons not adequately informed on the biological peculiarities of occupational cancers, especially their long latent period. Furthermore, the not infrequent absence of reliable and convincing statistical data on the occurrence and incidence of occupational cancers, as well as the existence of improperly prepared and, therefore, misleading statistical evidence, favors the development of a negative reaction. A second factor which tends to interfere with a wider knowledge of the incidence of occupational cancers is the apprehension of industrial management that an unrestricted public recording and scientific discussion of these neoplasms might result in undesirable publicity to the organization involved in such hazards, and might thus impair the sale of their products. It is feared, moreover, that such publicity might cause the institution of expensive and sometimes unwarranted compensation suits; that it might necessitate the costly rebuilding of existing plants; and that it might require the introduction of extensive and complicated technical, sanitary and medical precautionary measures, which might possibly hinder production, alarm workers, and cause considerable outlay over prolonged periods. Although the financial burden connected with such measures would not represent a serious obstacle to their adoption by management, as the cost can be passed on to the consuming public, an uneven application of such regulations in different states would result in unbalancing the competitive field and thus would be objectionable. There is also the possibility in management's mind that a greater degree of publicity on occupational cancers might result in the passage of laws and the regulations requiring a closer and more stringent governmental supervision of plant operations and of treatment of workers.

LABOR AND LABOR ORGANIZATIONS: Although neither labor nor management is always aware of the carcinogenic hazards connected with certain occupational activities, it cannot be said that labor always adopts readily the preventive and prophylactic measures prescribed by management for labor's protection against hazards already recognized. Such an attitude toward precautionary measures is dictated in part by the common human negligence toward everyday injurious agents not causing readily apparent disease manifestations, and in part by the fact that such measures may cause some physical inconvenience to the workers, or may interfere with their productivity and thereby their income. For instance, periodic cystoscopic examinations for workers in certain dye plants cause them a definite degree of discomfort. For this reason, their importance as a prophylactic measure may not always be properly appreciated by the workers concerned. The relatively high incidence of precancerous chronic roentgen dermatitis observed among radiologists indicates that this indifference to a known carcinogenic hazard is not limited to workers without a proper education in biology and medicine. Another example of the same attitude is often shown by workers who leave occupations in which they sustained dangerous exposure to carcinogenic agents and who neglect later on to remain under medical supervision, even when regularly urged to do so by their former employers. The excessively long latent period involved in the development of some of the industrial neoplasms makes such supervision an essential if the disease is to be discovered in time; and yet workers only too often forego medical examinations which could save them from the worst manifestations of cancer, or even prevent its appearance. The absence of reliable and adequate information on the significance and scope of the occupational cancer hazard, as well as an insufficient appreciation of the extent of that hazard on the part of officials of labor organizations, seems to be responsible for the fact that, so far, these leaders generally have evinced only an occasional interest in the probem, and have exerted little effort to impress either workers or management with its urgency.

LEGISLATIVE BODIES: It is obvious that the adequate protection of workers against occupational cancer hazards, and of the general population against environmental industrial carcinogens, depends to a large extent on the existence and enforcement of proper laws covering the many facets and special conditions of this complex problem. Occupational cancers, essentially the products of modern industrialization, are relatively recent phenomena. Consequently, they have not yet become the subject of established and intelligent legislative procedures in most countries. Furthermore, even those countries which have laws dealing with occupational

[NOTE: "Problems in the Control of Occupational Cancer," is from the concluding part of DR. HUEPER'S "comprehensive review of current knowledge of the environmental causes of human cancer," contained in Supplement 209, Public Health Reports, 1948, (70 pages) entitled "Environmental and Occupational Cancer." This is obtainable, at 20 cents per copy, from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.]

cancers have not always made sure that they are adequate. Most of them are more or less defective in insuring reasonably safe working conditions in factories, workshops and laboratories producing, using, or handling carcinogens. Compensation laws covering carcinogenic occupational hazards, for example, often apply only to some of the agents, or to defined operations in which contacts with these agents exist. Often they do not take proper account of the long latent period following exposure, and thus eliminate a great number of justified claims. Criminal codes should take cognizance of the fact that the willful and undue exposure of an individual to a carcinogenic occupational agent for personal gain by another party is for all practical purposes equivalent to an attack with a deadly weapon with a delayed action mechanism.

DEPARTMENTS OF PUBLIC HEALTH, INDUSTRIAL HYGIENE, CANCER CONTROL AND LABOR: The manifest dearth of reliable and adequate information on occupational cancers, the defective nature of existing laws applying to these neoplasms, and the lack of sufficient appropriations for their study, have prevented various governmental agencies concerned with this industrial hazard from becoming sufficiently active. Official statistics on the problem are, therefore, highly incomplete in most countries. The situation is somewhat better, however, in countries which have made occupational cancers notifiable diseases, and in which governmental inspection of factories and workshops has been instituted.

MEDICAL PROFESSION: The medical profession in general has been slow in the past to appreciate properly the causative role which the prolonged and unobtrusive action of extrinsic physical and chemical agents may play in the production of many chronic and often etiologically still obscure degenerative diseases, such as arteriosclerosis, arthritis, and cancer. It is therefore not surprising that most physicians have scarcely begun to learn about the carcinogenic properties of occupational agents. Occupational data in the histories of cancer patients are consequently either completely lacking or of little scientific value. It is not enough to record, for instance, that a patient was a mechanic or a chemical worker at the time a cancer became manifest. On the contrary, it is essential to ascertain his complete occupational history in relatively great detail for as much as some 20 years before the discovery. The appropriate occupational risks must be looked for in the earlier work experience of men afflicted with cancer of possibly industrial origin. Such tedious inquiries, however, are not being made today, even in hospitals predominantly handling cancer patients. It is obvious, moreover, that any such inquiries, and any intelligent deductions from them on the relation of the data obtained to the existing cancer, can be made only by persons possessing a genuine knowledge of industrial conditions, industrial carcinogenic hazards, and occupational cancers. At present, this type of specialized information is possessed only by a relatively small number of members of the medical profession.

Public Health and Industrial Problems

INCIDENCE AND CAUSATIONS. To date, some 8,000 cases of occupational cancer caused by a large number of definitely recognized or strongly suspected carcinogens of physical, chemical or parasitic character have been observed in workers engaged in a great variety of occupational activities. These cancers have affected many organs and tissues. Their localization in different parts of the body has depended in part on the type of contact with a particular agent, in part upon its physicochemical qualities and the reactivity of the organism. The fact is thus established that extrinsic agents connected with the occupational activity of man are capable of eliciting cancerous growths in human tissues irrespective of any physiologic or pathologic senile changes or hereditary influences.

NUMBER OF CARCINOGENS: The number and variety of occupational carcinogenic agents have been increasingly steadily and rapidly during the past 60 years and, at the same time, the number and types of carcinogenically hazardous operations have increased at a rate paralleling the degree of expansion and diversification of industrial activities during the same period.

VARIETY OF CARCINOGENIC MECHANISMS: The marked discrepancies in the physicochemical properties of the different recognized and suspected occupational agents indicate that they exert their specific carcinogenic effect on the tissues by different mechanisms. Some seem to possess properties of direct cellular cancerization; others elicit such reactions in an indirect way either by causing endogenous carcinogenic substances in the tissues with which they come into contact, or by eliciting metabolic disturbances in internal organs, such as the liver or endocrine glands, which then generate endogenous carcinogenic substances. It is evident therefore that cancers of apparently endogenous origin may actually have a primary cause.

DEFECTS IN STATISTICAL DETERMINATION: The demonstration of an occupational origin of cancers depends mainly on statistical evidence, which often shows an excessive incidence of a certain type or types of cancers in a restricted group of workers. Inasmuch as recent analyses of the incidence rate and manifestation age of occupational cancers have shown that these factors depend on the potency of the carcinogen, the intensity and duration of exposure to it, and the age of onset, it is obvious that statistical methods will miss all those occupational cancers which do not differ in their incidence rate and maniifestation age from their prototypes of unknown etiology in the general population. The existing evidence therefore suggests that at present only the most potent and obvious occupational cancers and carcinogens have been discovered, while those of low incidence rate caused by carcinogens of low potency have not yet been recognized. This conclusion is supported by the fact that, so far, occupational cancers have not been demonstrated in either the gastro-intestinal tract or the nervous system. The cells of the alimentary tract obviously come in direct contact with a host of extrinsic factors; those of the nervous system react readily to a great number of them following their resorption into the organism. On general grounds, therefore, it is highly improbable that two entire organ systems should be totally immune to extrinsic carcinogens, including those of occupational origin. These considerations add to the evidence indicating that the number of occupa-

tional cancers is appreciably higher, and their variety as to sites and types definitely greater, than is suggested by recorded figures.

PROBABILITY OF INCREASE IN OCCUPATIONAL CANCERS: The abnormal character of some of the industrial activities of recent years makes it probable that there will be a rise in the number and types of occupational cancers during the next decades, as happened under similar conditions after the First World War. Evidence again is accumulating that under war pressure, plants were built and manned by men inadequately familiar with the occupational carcinogenic hazards inherent in many of their operations. It is possible that such hazards were in the main, avoided in the construction and operation of American plants and laboratories handling radioactive substances. However, the final evaluation of this problem cannot be made until some 10 to 20 years have elapsed, and a detailed and thorough study of cancer incidence among the large number of former employees of these plants has been made. The elaborate precautionary measures taken in these operations, on the other hand, do furnish a striking illustration of the seriousness of the occupational cancer hazard as applied to a fairly limited industrial activity and to an agent which can be traced with comparative ease. A second factor growing out of World War II which may bring about an increase in the incidence of occupational cancers during the coming years is the dislocation of many industries, particularly abroad. This is due partly to the destruction or dismantling of many factories and partly to the construction of plants in certain countries which formerly had different types or little industrial production, and thus were not experienced in the control of operations using carcinogenic occupational agents. This means that the bad record, carcinogenically speaking, which resulted from the hurried development of large-scale chemical industries during and after World War I may recur.

CHANCE OF EXPOSURE WIDESPREAD: The scope of the occupational cancer problem is made even more apparent when the types and numbers of persons potentially exposed to occupational carcinogens are realized. These agents may affect workers in basic industries producing, using and handling raw materials and semifinished goods possessing carcinogenic properties; in consuming industries, workshops, trades and professions using the output of the basic industries; and in transport and merchandising organizations engaged in packing, loading, shipping, and selling industrial goods with carcinogenic properties. They also may have an adverse effect on that part of the general public which consumes such goods, or which comes in contact with carcinogenic industrial wastes discharged into the air, water, or soil. The chain of events whereby an occupational carcinogen may be transformed into a medicinal or environmental one is readily demonstrable with substances such as tar or arsenic. The general existence of these various interrelations is shown by the appearance of the various occupational cancers in different countries following the establishment of industries producing the carcinogens.

NEED FOR STUDY: The scientific study of occupational cancers, precancerous conditions, and causative agents offers a unique opportunity for ascertaining the nature of extrinsic agents which are carcinogenic to man, and to investigate in the human being the local and systemic reactions elicited by such agents during the preparatory and manifestation periods of the cancerization process. The study of occupational cancers also permits the determination of the role which associated environmental, hereditary, and constitutional factors play in the susceptibility to occupational carcinogens in man. In addition, it makes possible the development of specific or non-specific preventive, prophylactic and therapeutic measures, many of which might be applicable in human cancer in general.

Control of Occupational Cancers

AN EFFECTIVE, rational control of occupational cancers depends on accurate knowledge of the causative agents, and on the institution and strict enforcement of adequate preventive and prophylactic measures. This goal may be approached through the following methods and procedures.

ELIMINATION OR CONTROL OF OCCUPATIONAL CARCINOGENS: Exposure to carcinogens in industry should be eliminated wherever possible, or at least reduced to the technically feasible minimum. This can be achieved by designing buildings and machinery to prevent the escape of dust, fumes, mists and vapors (the closed system of production); by the institution of efficient exhaust ventilation; by maintaining a high level of good housekeeping; by disposing of carcinogenic wastes with suitable precautions; and, when necessary, by the isolation of a carcinogenic operation from the rest of the plant. Exposed workers should be furnished with suitable protective clothing, gloves, masks, and similar safety devices. The degree of unavoidable contact should be further reduced by the installation and enforced use of proper sanitary measures, such as special eating quarters, washing and bathing facilities, and separate lockers for street clothes and work attire. Workers should be familiarized through lectures repeated at regular intervals with the type of carcinogenic hazard present, so as to obtain their willing cooperation in the enforcement of the various precautionary measures. Repairs after accidents during which an increased exposure to the carcinogenic agent is likely to occur, and the repair and cleaning of machinery and pipelines, should be performed by specially trained and protected teams. Measures designed to reduce contact with occupational carcinogens are of great value, as observations made in connection with several occupational cancers and with experimental cancers of animals have shown that a decrease in the degree of exposure results in a lengthening of the latent period, thus possibly delaying the manifestation of a cancer even beyond the average span of life.

MEDICAL EXAMINATIONS: Since the practical importance and general appreciation of occupational cancer hazards is bound to grow during the coming years, employers would be wise to determine in pre-placement examinations the applicant's complete occupational history, for ascertaining any previously sustained exposure to occupational carcinogenic agents. In view of the usually long latent period of occupational cancers, this procedure represents an expedient safeguard against sub-

sequent compensation claims for such disorders originating from exposures sustained by the claimant before entering the employment of the party sued. Applicants for clerical jobs should be included, as it is not uncommon that persons formerly employed in production and laboratory work may later change to white collar jobs. Medical supervision and periodic medical examinations should be maintained not only during the time of employment in a hazardous operation, but for some 15 to 20 years beyond the end of employment, thus providing medical observation of the exposed workers for the entire latent period of occupational cancers. It may be advisable to establish for this purpose a number of industrial cancer detection clinics, staffed by physicians experienced in the occupational background of precancerous and cancerous manifestations, and provided with technical assistants trained to cover the various non-medical aspects of occupational cancer which would be required for the efficient operation of such clinics. Periodic medical examinations should be made not only of those workers who are regularly employed in operations with carcinogenic hazards, but also of those who may enter such operations at irregular intervals, such as repairmen, guards, truckers, shippers, supervisors, and chemists and physicists of control departments and laboratories, as well as of those who are working within an effective range of such operations (fume zone) such as yard workers. The frequency of periodic medical examinations should be increased with the age of the exposed employee and with the length of his employment in the hazardous operation. The type of medical examination should be properly adapted to the special kind of carcinogenic hazard existing. Frequent spectrographic examinations of the urine of workers in contact with aromatic amines for the presence of these substances and of their metabolic derivatives should be practiced in plants producing or handling such products. Annual or semiannual cystoscopic examinations are highly desirable wherever workers can be persuaded to submit to these procedures. Inasmuch as bladder cancers are not infrequently symptomatically silent (especially as to the presence of hematuria) until they have reached an advanced stage, cystoscopic examinations afford the only efficient diagnostic means for the discovery of bladder cancers in dye workers while they are still in a precancerous or early cancerous stage. Whether or not the frequent cytologic study of urinary sediment with the Papanicolaou method may be of additional help in this respect remains to be determined. In periodic studies of the blood of workers exposed to atcinic energy and benzol, special attention should be paid to the presence of hyperleukocytotic reactions and to excessive increases of monocytes. Roentgen films of the chest should be made at one-year intervals for all workers exposed to the inhalation of radioactive substances, tar fumes, arsenical dust, chromate dust and fumes, nickel carbonyl vapors, mists of mineral oils, asbestos dust, and beryllium compounds. Similar studies of the nasal sinuses are indicated for workers employed in operations entailing inhalatory contact with nickel carbonyl. These tests might well be supplemented by periodic cytologic examinations of the sputum and of the nasal discharge, particularly where chronic inflammatory conditions of the respective air conduits are found to exist....

NOTIFICATION: All precancerous and cancerous lesions produced by recognized or suspected occupational carcinogens, as well as all cancers observed among workers employed or once employed in operations with carcinogenic hazards, should be made notifiable with departments of labor or health. Both the managers of such operations and the attending physicians should be held liable, and violations of such a law might be considered criminal offenses. Regulations of this nature are in force in several states and countries, and form an essential basis for an effective control of occupational cancers through governmental cooperation with industry.

DETERMINATION OF MINIMAL EFFECTIVE EXPOSURE: Definite efforts should be made to determine the maximal permissible degree of exposure to the various carcinogenic agents, and to the different types of contact with them. This task is obviously a very difficult and tedious one, as it entails the qualitative and quantitative determination of the various carcinogenic agents not only in different industrial products, but also in biological media such as blood, urine, bile, tissue juices, and tissues. Long-term and detailed observations on men and animals exposed to these agents are essential for the establishment of biologic standards.

COMPENSATION LAWS: The institution and enforcement of adequate and uniform compensation laws designed to cover the special aspects of occupational cancer, worded in sufficiently general terms to include any future developments in this field, are an urgent need in many states. In view of the complex character of the occupational cancer problem, it may be desirable to staff compensation courts judging cases of occupational cancer with medical and technical experts.

INDIVIDUAL IDENTIFICATION: The names and other essential data of identification, such as social security number, of all workers exposed for a sufficiently long period to any known or suspected occupational carcinogen should be recorded with the departments of labor, public health, or industrial hygiene for future reference. Only thus can factual evidence be obtained of the total number of workers exposed to such hazards; the types of carcinogens, contacts and operations involved; the length of the latent period; incidence rates, types and sites of cancer observed; sex, race, and contributory factors playing a part; and other data of importance. With the increasing industrial activity of women, it is essential that such a compilation of information should include all presently and formerly employed female workers. The availability of such data is an important prerequisite to the determination of the scope of the occupational cancer problem, and for the preparation of effective controls.

EDUCATION: All available means of education and information should be used to spread knowledge and understanding of the occupational cancer problem among the various parties directly or indirectly concerned with it. One of the aims of such education should be to create among the various groups a spirit of cooperation essential for combatting successfully the occupational cancers that form an important part of the general cancer problem....

Medical Testimony

L. RAY ELLARS, B.S., M.D., F.I.C.S.,
and
DR. WILBERT M. TWYMAN, A.B., M.D., F.I.C.S. (Assoc.)
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IN THESE times it is impossible to know everything, but it does behoove us to know something of everything and as specialists in our chosen line to know almost everything of something. As for the paper we are presenting, we want to qualify in the second bracket: namely knowing something of law, but very little of that something.

As far as we are able to gather, the calling of doctors as expert witnesses originated in England in 1350. In the trial of a criminal, it was found necessary to call a physician to examine an injured person to determine whether a certain injury constituted "mayhem" or maiming of that individual, to testify as to his findings and to express an opinion. The use of this expert was so enlightening to the jury that it soon became the custom. Since that time doctors have probably been called upon to assist the courts more than any other type of expert witness.

In order to get a doctor into court he must be subpoenaed. This word means under penalty for contempt of court, plus reimbursement for damages stemming from his non-appearance. For instance, suppose an insurance company refuses to pay double indemnity in an accidental death where suicide is suspected. The doctor knows facts that would establish suicide, but he ignores the subpoena and the case proceeds without him. The company fails to prove suicide and pays the plaintiff $20,000 instead of $10,000. It has lost $10,000 because the doctor failed to testify and the insurance company can sue the doctor and recover.

Doctors are frequently called upon to testify in court, and automatically fall into one of two categories, the ordinary witness and the expert witness. The ordinary witness is one who testifies to facts that he has learned through his various senses, for instance, what he saw, heard, felt, etc. As a rule the physician who is on the witness stand in the capacity of an ordinary witness is the attending physician. However since he is closely associated with the patient he is usually called upon at the end of his testimony to give an opinion as to such things as permanency of ill effects, permanency of any resulting scars and whether or not the alleged cause of injury is in his opinion a competent producing cause of the injury. This is called opinion evidence and must be rendered only by a qualified expert. Since under the law a duly licensed and qualified physician is considered an expert witness in matters involving the subject of medicine and since the above attending physician was asked an opinion, we must conclude that physicians are most usually called on as expert witnesses and very seldom as ordinary witnesses.

An expert witness on the other hand testifies as to conclusions drawn by him from facts found by his own investigations or from facts brought out by the testimony of others. His conclusions result from reasoning which can only be determined by one possessing special knowledge of the subject involved. In other words, the expert witness to a certain extent, draws conclusions for the jury from the technical facts presented, or, in the language of former Chief Justice Shaw, "a man's professional pursuits, his technical skill, and his knowledge of science not common to man in general, enable him to draw an inference where men of common experience, after all the facts are proved, would be left in doubt."

AN EXPERT witness should never appear to take sides in any court procedure. His only duty is to give an opinion where requested. Any tendency for him to appear partial to a particular side, is at once noticed by the jury, and the value of his testimony is that much discredited. A physician and surgeon may testify to the following things:

1. His judgment as to physical condition of a person.
2. What certain observed physical and mental conditions indicated.
3. The existence of disease or injury and its character.
4. His diagnosis of bodily and mental disease.
5. The stages of development of a disease.
6. The proper treatment for such a disease or injury as exists.
7. The probable effect of a lack of proper treatment.
8. Whether treatment rendered was proper and necessary.
9. Inference as to cause of certain injuries and physical conditions.
10. Inference as to cause of death.

Expert witnesses are entitled to special compensation for services rendered and if this is refused can decline to testify, even if subpoenaed, and not be in contempt of court. However, the attending physician if subpoenaed must appear but can only expect a fee equal to any other ordinary witness, or failing to appear he will be in contempt of court. The court may even ask an opinion question of this ordinary witness and even then he is only entitled to ordinary compensation.

As to the technical language used by the physician, it should be as plain as possible so the jury understands it. For instance it is better to say the tip of the finger was crushed, than it is to say the distal phalanx of the finger was crushed. Other examples are swelling for edema, black and blue or discoloration for ecchymosis, stiffness of a joint for ankylosis. It must be kept in mind at all times that the average (say average and not individual) jurors and that what they don't understand goes by also very sentimental too. So simplicity is the essence of necessity. Further we must remember that we are at all times addressing ourselves to the jurors and that what they don't understand goes by the board.

I remember one case in point, where in a railroad accident a man had a piece of bone pushed down into his brain. This is not a very unusual accident and in the majority of cases causes no particular

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ill effects if properly handled. In this case, however, the bone was pried back into position by a small steel instrument, and the patient made a perfect recovery. The name of this instrument however, is a "bone elevator" and the lawyer for the plaintiff kept repeating that the bone was replaced with a bone elevator. This so influenced the jury that a verdict of $7,000 was rendered to plaintiff. One of the jurors told me later that if that lawyer had said elevator once more he would have cried, as he could see that big elevator (I guess he meant passenger or freight) lifting the bone from the patient's brain.

In the present day of speed, multiplicity of autos, increased common carrier service and workmen's compensation, medical controversies in court are increasing and subpoenas for doctors multiplying. Years ago many court cases were settled at the origin by limiting the workmen's rights by the phrase "fellow servant" and the common carrier passenger by "willing assumption of risk," a very simple procedure but entirely outmoded today. Since a doctor is more liable to appear in court as an expert witness it is most advantageous for him to maintain proper records. This is possible even in the face of increased study from changes in medicine and exacting business besides. Once a doctor is called as a witness he should not change or add to his record of the case as this lends discredit to the entire record although the salient portion is entirely true.

If a doctor is to testify properly he must prepare himself for the case in question and for its many ramifications; that is any anatomical or physiological technicality which might be pertinent. A doctor well prepared is doubly armed to face any cross examination. Primarily he knows more medicine than any lawyer can hastily cram into his mind and this additional special preparation should give him confidence to meet any inquisition.

In order to protect himself a doctor should study a case very completely before any court action is sought or supported. He should also discuss with the lawyer the laws involved and what can be expected. If the doctor cannot see eye to eye with the lawyer he should not enter the case and weaken the case for the lawyer.

Lawyers are sometimes less scrupulous and paint a very pathetic picture of a widow and her small children in order to arouse the doctor's sympathy, and by this means persuade him to testify to unreasonable things to bolster up a weak case. A doctor should never allow a lawyer to tell him what to testify to; the physician tells the lawyer.

Answering questions is very important in court. In the first place the witness swears to tell the truth, the whole truth and nothing but the truth. No one can prevent him from telling the truth but many times he has difficulty in telling the whole truth. Medicine is not an exact science and varies with the person and conditions. Therefore, a physician cannot answer every question "yes or no" as he is sometimes directed. If a question is worthy of a 75% yes answer but not an unqualified yes he may protect himself if forced to answer by answering "Yes, but." This opens the way for a discussion on redirect examination of the restriction which the witness wished to place on his yes or no reply.

In the second place he must be very careful on cross examination not to weaken or reverse his opinion. A wise lawyer will start on a series of questions the first of which tends to slightly modify the strength of the original opinion. The question is reasonable and the answer is yes and the second question likewise reasonable and deserving of a yes answer until finally the lawyer has the doctor reversing his original opinion. A wiser witness will be on the alert for such a series of questions.

A DOCTOR'S manner in court is significant. He should, of course, be dignified and his answers should be prompt, straightforward and not evasive. His voice should be clear and distinct and he should address himself to the jury and at the same time be careful not to turn his back on the judge. Absolute calm is essential. Some cross examiners make an effort to get the doctor confused by getting him angry. No wise doctor will permit this to happen. However, if a lawyer chooses to use this route the judge will usually stop him before he goes very far.

There are a few "don'ts" for a doctor to remember when called as a witness. Don't hesitate to acknowledge that you have consulted with the lawyer for whom you are testifying. Don't hesitate to admit that you expect a fee for your services and indicate that you are entitled to it. Don't start cases by enlisting the services of a lawyer for a patient. It is acceptable for a physician to tell the family what he thinks their rights are, but let them seek their own legal aid. Don't prompt a lawyer in the questions he is to ask the opposing physician. Don't hang around court after testifying. Finally, don't accept employment as an expert until the whole story has been heard. If a physician can't agree with the justice of the suit, the lawyer should be told so, and that if he is employed he will probably testify for the opposition before the cross examination is over. If after a physician is on the stand he finds that the conditions of the case have changed, the lawyer should be told that he, the physician cannot testify in his favor under the new conditions. The lawyer will, of course, become angry and the physician will lose a fee, but he will later gain the respect of the lawyer and keep his own.

Last, but not least, write reports so the average claim agent can read them.

Congress on Industrial Health

— Objectives, Program and Selected Abstracts of the Ninth Annual Congress on Industrial Health, January 18-19, 1949, Chicago —

C. O. SAPPINGTON, M.D., DR. P.H.

[EDITOR'S NOTE: This report includes very brief excerpts of the opening meeting on "New Horizons in Industrial Health," and meetings of the panel on "Scope and Distribution of Medical Service in Industry." For other data, the Proceedings of these meetings, as published by the American Medical Association, should be consulted.]

THE Ninth Annual Congress on Industrial Health was planned as one in a series of discussions between official and other agencies having responsibility for the administration of health services to industrial workers. The omission of industrial health as a topic for consideration at the recent National Health Assembly suggested that the first of these conferences be sponsored jointly by the Division of Industrial Hygiene of the U. S. Public Health Service and the Council on Industrial Health of the American Medical Association. The panel groups to which the major work of the Congress was assigned were kept small to promote active and provocative discussion. The recommendations of these panels will constitute important guideposts in the future development of industrial health services.

It is stated that labor conferences will attempt to define more clearly the problems of inter-professional relations, coordination of interest in industrial health by labor, management and the health professions, increased community acceptance of industrial health and the need for continuity of preventive and positive health practices into the adult years.

The Co-Chairmen of the Congress were DR. ANTHONY J. LANZA, Chairman of the Council on Industrial Health, and DR. J. G. TOWNSEND, Chief, Division of Industrial Hygiene, U. S. Public Health Service.

THE program was composed of an opening general session which featured a symposium on "New Horizons in Industrial Health" on Tuesday morning, January 18. The remainder of the program consisted of four concurrent panels conducted on Tuesday afternoon, Wednesday morning and Wednesday afternoon, climaxed by a dinner meeting on Wednesday evening, at which there were summaries of panel discussions by the chairmen of the previously held panels. The subjects of the four panels were as follows:

1. "Scope and Distribution of Medical Service in Industry."
2. "Medical Aspects of Human Relations in Business and Industry."
3. "Environmental Hygiene."
4. "Health Education in Industry."

The panels were further divided into subject sessions, which are shown in the detailed program.

In conjunction with the Ninth Annual Congress on Industrial Health, the AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, as a part of its annual meeting, arranged a symposium on "Education in Industrial Medicine," which was held Monday afternoon, January 17, 1949, with the following subjects and speakers, DR. ROBERT A. KEHOE being the moderator:

1. "Graduate Education"—LEONARD J. GOLDWATER, Professor of Industrial Hygiene, Columbia University School of Public Health.
2. "Post-Graduate Education"—JOHN H. FOULGER, M.D., Director, Haskell Laboratory, Wilmington, Delaware.
3. "The Program of the Council on Industrial Health of the American Medical Association"—ERNEST W. BROWN, M.D., Executive Officer, Committee on Education, Council on Industrial Health, Americal Medical Association.
4. "The Program of the Council on Medical Education and Hospitals of the American Medical Association"—DONALD G. ANDERSON, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association.
5. "The Program of the American Association of Industrial Physicians and Surgeons"—EDWARD C. HOLMBLAD, M.D., Managing Director, AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS.
6. Discussion—opened by ANTHONY J. LANZA, M.D., Chairman, Institute of Industrial Medicine, New York University-Bellevue Medical Center.

The detailed program of the Congress on Industrial Health was as follows:

Tuesday Morning, January 18

SYMPOSIUM: New Horizons in Industrial Health, E. J. MCCORMICK, Moderator.

"The Hospital as User and Supplier of Occupational Health Services"—JOSEPH G. NORBY.

"The Industrial Physician and Accident Prevention"—NED DEARBORN.

"Health Services for Adults"—LEONARD A. SCHEELE.

"Can Labor, Management and the Professions Work Effectively Together in the Health and Safety Fields?"—ARTHUR J. GOLDBERG.

Tuesday Afternoon, January 18

PANEL on Scope and Distribution of Medical Service in Industry. Panel Committee: FREDERICK W. SLOBE, Chairman; CARL T. OLSON, Secretary; EDWARD C. HOLMBLAD; JAMES M. CARLISLE; LEONARD GOLDWATER; GLADYS DUNDORE; GAYLORD R. HESS; JOHN CRONIN; LEO PRICE; C. O. SAPPINGTON.

How Can We Make Health a More Effective Force in Industry?

"Industrial Medical Potentials"—WILLIAM FULTON.

"Extension to Uncovered Plants"—LEONARD ARLING.

"Extending the Potential"—WILLIAM SEYMOUR.

How Can We Make Industrial Health a More Effective Force in the Community?

"In Public Health Services"—HERMAN HILLEBOE.

"In Voluntary Health Services"—ROSS MCINTYRE.

"In General Medical Practice"—GEORGE F. LULL.

Wednesday Morning, January 19

ARE We Making Satisfactory Process in Reducing Occupational Disability?

"By Prevention"—PHILIP DRINKER.

"By Medical Care"—HARRY SPAULDING.

"Through Rehabilitation and Re-employment"—CLARK BRIDGES.

"By Administrative Procedure"—MARSHALL DAWSON.

Can Industrial Medicine Contribute More Effectively to the Health Problems of Special Groups?

"Women"—ANNA BAETJER.

"The Ageing"—A. J. CARLSON.

"The Chronically Ill"—CLARENCE SELBY.

Wednesday Afternoon, January 19

THE Significance of Non-occupational Disability"—ROBERT C. PAGE.

What Are the Important Factors Affecting Industrial Medicine's Relation to Medical Care Insurance?

"Health in Collective Bargaining"—CHARLES DONAHUE.

"Cash Sickness Benefits"—JOHN WITTMER.

"Voluntary Insurance Plans"—JAMES McVAY.

"National Legislation"—W. J. HOLLOWAY, JR.

PANEL on Medical Aspects of Human Relations in Business and Industry. Panel Committee: GEORGE H. GEHRMANN, Chairman; RAYMOND HUSSEY, Secretary.

"Management Point of View"—W. BLACKIE.

"Management, Morale and Productivity"—DANIEL KATZ.

"Mentally Normal People at Work"—F. W. DERSHIMER.

"Occupational Research Program"—EDWARD L. CUSHMAN.

"Industrial Human Relations in Action"—HAROLD A. VONACHEN.

PANEL on Environmental Hygiene. Panel Committee: WM. P. YANT, Chairman; KENNETH M. MORSE, Secretary; THEODORE HATCH; K. E. MARKUSON; JAMES STERNER; FRANK BURKE; THEODORE WATERS.

This panel was divided into six working committees which met concurrently during the sessions.

Committee on Atmospheric Pollution—H. G. DYKTOR, Chairman.

Committee on Chemical Agents of a Toxic Nature—H. F. SMYTH, JR., Chairman.

Committee on Biological Agents of a Hazardous Nature—THOMAS FRANCIS, Chairman.

Committee on Physical Agents of a Hazardous Nature—JAMES STERNER, Chairman.

Committee on Education and Application—THEODORE HATCH, Chairman.

Committee on Agencies Responsible for the Control of Industrial Health Hazards—VINCENT P. AHEARN, Chairman.

PANEL on Health Education in Industry. Panel Committee: THOMAS PARRAN, Chairman; PERCY SHOSTAC, Secretary; W. W. BOLTON; WILL F. LYON; MYRNA BORDELON; H. GLENN GARDINER and CYRIL MURPHY.

Tuesday Afternoon, January 18

THE Kind of Health Education that Pays Off in Industry:

"Health Education Can be Good Business'—ARTHUR STEINHAUS.

"The Kind of Health Education that has Paid Off at Eastman Kodak"—WILLIAM A. SAWYER.

"An Insurance Company's Experience with Health Education"—ROBERT HODSON.

"Labor Wants the Facts on Health"—PAULINE NEWMAN.

Wednesday Morning, January 19

VOLUNTARY and Official Agencies as a Health Education Resource:

"How to Win Friends and Influence People in Industry"—JOHN M. ROCHE.

"Developing the Opportunity for Case-Finding in Industry"—EDWIN R. LEVINE.

"Wartime Lessons in Health Education in Industry"—ELIZABETH PRITCHARD.

"Local Health Agencies Must Accept the Challenge of Industry"—ALEXANDER ROPCHAN.

"Labor Unions Help to Make the Industrial Worker Health Minded"—I. DONALD FAGIN.

Wednesday Afternoon, January 19

HEALTH Education Develops New Techniques to Meet Industry's Needs: Chicago Develops a Plan for Employee Health Education:

"The Chicago Industrial Health Association: Birth, Growth, Mutations"—PERCY SHOSTAC.

"Radio as a Medium for Health Education: A Discussion from the Point of View of the Advertising Agency, the Sponsor and the Producer"—MILFORD BAKER, EDWARD G. GERBIC, BEN PARK.

"A Monthly Pictorial Magazine as a Popular Vehicle for Health Education"—E. P. LICHTY.

"Educating Management to the Value of Health Education and Services in Industry via the Association's Monthly News Letter"—LESTER N. SELIG.

Discussion and Summary—DR. PARRAN.

Wednesday Evening, January 19

DINNER Meeting: Summary of Panel Discussions by the Chairmen.

Symposium on "New Horizons in Industrial Health"

DR. ANTHONY J. LANZA welcomed the guests and delegates, calling attention to the importance of the far-reaching effects of the subjects and discussions of this meeting.

DR. TOWNSEND emphasized some of the important functions of the Industrial Hygiene Division of the U. S. Public Health Service, commenting particularly with respect to community atmospheric pollution; small plant services; periodic examinations, with reference to rehabilitation and re-employment; and the use of the state industrial hygiene units for local services.

DR. E. J. McCORMICK, the moderator, emphasized the importance of preventable accidents and stated that if this problem were solved, there would be very little of a problem remaining in the accident category.

JOSEPH G. NORBY, President of the American Hospital Association, speaking on the subject "The Hospital as User and Supplier of Occupational Health Services," stated that the hospital was a center of medical care and was concerned considerably with affiliation with community health agencies. Hospitals as organizations have been somewhat backward in promoting the health of their employees. However, at Columbia Hospital everything is done for the prevention, care following disease, and various other services with respect to hospital employees. This should also include preemployment and periodic examinations with immunization procedures. At Columbia Hospital, examination is necessary for payroll approval and

records are kept confidential. Return-to-work certificates are also used.

NED DEARBORN, President of the National Safety Council, stated that accidents were the chief of public health problems, causing more loss of working years than any other cause. He deplored the lack of data for prevention on the routine report forms and form materials. It was stated that we now stand on non-occupational accidents about where we did on occupational accidents in the year 1913. The physician can do a great deal in prevention of non-occupational accidents.

DR. C. L. WILLIAMS spoke for LEONARD A. SCHEELE of the U. S. Public Health Service on the subject "Health Services for Adults."

Industrial health is concerned with non-occupational factors—we cannot achieve industrial health objectives without attention to "off the job" health problems. A joint effort is needed, including labor and managemnt. Emphasis was placed on geriatric problems.

The values of community health services are really not appreciated at the present time. Absenteeism is caused mostly by non-occupational disabilities. Such problems are widespread. Housing was emphasized as one of the major problems, as were also home accidents.

Community health surveys form an important part of the material in this field, including those on tuberculosis, mental disease, cancer, diabetes, and heart disease.

A complete health inventory for all was advised. Multiphasic screening was also suggested. Expansion can take place through local health centers.

Scope and Distribution of Medical Service

How Can We Make Health a More Effective Force in Industry?

DR. WILLIAM J. FULTON spoke on the subject "Industrial Medical Potentials."

All personnel involved are those usually used. The future of industrial medical services is greatly dependent on good human relationships. Time is the reckoning factor—there is a better appraisal in time and quality than in cost and quantity.

With reference to the different kinds of services, the following figures are approximate: new injuries, both minor and major, 45%; redressings or other calls for injuries, 25%; and medical complaints, 20%. It was stated that 80 to 85% of the complaints are made by 30% of the employees and 60 to 70% of the absences are caused by 20% of the employees.

As to the expectancy of case calls in the dispensary, one out of 15 workers will show a case call, of which physical accounts for 47.6%; so-called "escape," 30.4%; mental, 3.2%; psychosomatic, 6.8%; feigned, 4.0%; and environment, 8.0%. The average time per case is 11.15 minutes, and the physician sees about 20% of such calls.

All in all, the medical staff time contributes about 70% of the work and the clerical about 30%.

About 57 minutes is the minimum for an examination for the various procedures and methods.

It was stated that if health insurance is provided, the 30% previously spoken of as causing 80 to 85% of the complaints will do most of the calling.

MR. WILLIAM SEYMOUR discussed "Extending the Potential," giving a review of accident experiences. It was stated that further reduction of accident rates must concern personal factors, hence there is a considerable job for industrial medicine.

A preference was expressed for the term "individual effectiveness" rather than "health." The industrial physician can supply the answer to increased individual effectiveness.

Emphasis was placed on the industrial medical program of prevention, since curative service alone doesn't improve the health status, and curative medicine is not in general the best approach.

DR. LEONARD ARLING spoke on "Extension to Uncovered Plants."

There are more than 30 million people employed in the small plants. An outline of the work of a small plant clinic which has been previously outlined in various papers was given.

Reference was made to Wisconsin provisions for health services.

In this whole program there is a public relations job for industry, the physicians, and others.

A review of correction of physical defects was given.

The cost of these services is about 0.3 to 0.4% of the payroll, in exchange for a big gain in efficiency.

In the discussion period, DRS. HOLMBLAD, CARLISLE, GOLDWATER, and WITTMER, and MRS. GLADYS DUNDORE made remarks, among which were the following: In order to secure full advantage of services rendered, doctors and nurses should not do clerical work. We should take the constructive medical approach in these services; comparative data in other industries are needed, of course, for proper appraisal. All persons should have ready access to the medical services. The point of view of repeaters on medical calls should be investigated. The worker should be "sold" health—in-plant health councils or health committees are advisable. We should strive for fewer calls rather than more.

DR. HOLLIS INGRAHAM spoke on the subject of "Public Health Services."

Health problems of adult life are extremely important (reference being made to DR. DICKINSON'S report recently from the Bureau of Economic Research of the American Medical Association). Epidemiology of accidents should be thoroughly studied.

In DICKINSON'S report, it is shown that in diseases lie the greatest possibility of improvement of the record.

A lengthy program was outlined for industrial physicians, including consideration of community activities.

DR. GEORGE B. DOWLING spoke on "Voluntary Health Services," and quoted the World Health Organization's definition of health. It was stated that the total approach includes cure and prevention.

MR. J. J. BLOOMFIELD has made the following three points: (1) Satisfactory industrial environment: (2) healthy community environment, and (3) healthy men and women in industry.

There are many involuntary agencies involved in this type of work, as well as voluntary groups.

A review of the services of the Red Cross was given.

DR. GEORGE F. LULL spoke on "General Medical Practice." The message of the objectives of the industrial physician should be carried to the com-

munity and to general practicing physicians. To accomplish this purpose, health councils are to be formed in various communities.

Various activities of the industrial physicians were outlined, which should be known to the community and the medical profession.

Part-time nursing services can be made an instrument of considerable value in extending these activities.

Industrial medicine is now recognized as a specialty and it should be remembered that it came up the hard way.

In the discussion, DR. GOLDWATER called attention to a recent study made by several students, of two different industrial groups similar in activity and in other respects, in which one had a physician and the other did not. It was discovered that there were twice as many outside referrals in the plant having a physician.

This, of course, is expressive of a specific type of case-finding.

Wednesday Morning Session

ARE WE Making Satisfactory Progress in Reducing Occupational Disability?

PROF. PHILIP DRINKER spoke on the phase of "Prevention," giving an engineer's view.

It is admitted that if the best job could be done, no problem would exist.

In general, occupational diseases are for the most part preventable.

The engineer certainly can do a good job on silicosis.

The large city hospitals could make an exhibit out of cases of silicosis, because they are so uncommon in urban communities.

The control of superimposed tuberculosis on silicosis has been difficult.

It is believed that the engineers can do a good job of controlling benzol and can help control lead poisoning, although engineering alone is not the entire answer to the control of lead poisoning.

One would not boast of success in the control of chronic carbon monoxide asphyxia.

There is a very praiseworthy tendency for the manufacturers to inquire into the toxicity of various solvents.

With respect to compensation, it appears to be a real help in engineering prevention. Labor's cooperation thus far has not been very significant in prevention. Among the other things which are controllable are heat and humidity, and deep-sea diving, although the latter is somewhat dangerous.

Finally, maximum allowable concentrations should obviously be flexible in order to attain their maximum usefulness.

DR. HARRY SPAULDING spoke on the subject of "Medical Care," saying that not enough progress was being made in this phase. Many figures were quoted to show the situation worse now than formerly.

Occupational disability is not easily definable, and the question arises as to whether it should be defined by others than medical men.

The malingerer is rare—but many do take advantage of the laws.

It is apparent that many types of benefits encourage disability, or a "carry-over" in bad seasons. One of the requisites for making progress in medical care is good medicine and good surgery. In this respect, the objectives of the Academy of Compensation Medicine were outlined.

The worker should be returned to his former occupation as rapidly as possible by a correct diagnosis; asepsis; extensive x-rays; appropriate laboratory work; care in an accredited hospital; specific treatment in disease of the vascular system; early reduction of fractures; conservative and appropriate bone fixation; immobilization; early ambulation; and tentative maximum periods of disability.

Minimum and maximum periods of disability for various types of fractures were suggested.

One of the difficulties in this type of work is the fact that one cannot legislate diagnosis, treatment, and rehabilitation.

It is thought that progress is being made in this field as judged by best care.

MR. CLARK BRIDGES spoke concerning "Rehabilitation and Re-employment."

'We still have occupational disease cases although such diseases have been known for ages. The mortality has been greatly reduced by better methods, therefore there are more disabled persons than formerly. Judged by the available methods of measurement, progress is really being made, but much more is to be done. It is to be recognized that all methods are fairly recent, and that industrial medicine is also in its infancy.

'One of the most important concepts is that most of the handicapped are really employable, although many persons are not cognizant of the methods of placement, selection and job fitting.

'All expressions of so-called "handicapped" have undesirable connotations—what we are after is proper placement of approximately 97% of all people—in other words, everyone has some disability or disabling tendencies.

'Although we have many specific techniques in the solution of these problems, they are not well known or widely applied. Apparently the average employer is usually too lazy to do placement or to consider handicapped individuals.

'An important principle in the success of reducing occupational disease is the proper placement of the handicapped.'

Several plans were discussed and considered and the Toronto plan was approved—the U. S. Department of Labor plan of placement was also described.

MR. MARSHALL DAWSON, in completing this particular subject, spoke with reference to "Administrative Procedures."

Teamwork is highly essential, and failures are caused by the lack of it. Setting up rehabilitation centers before providing proper medical relations is to get the cart before the horse. There appears to be great difficulty because of "fumbling" before expert attention is given to many individuals.

It is estimated that the 2% of disputed cases get more attention than the 98% of undisputed cases, in many states.

DR. ANNA BAETJER spoke concerning experiences with "Women in Industry."

Experience has shown that there was increased employment of women by industry, the increase reaching about 17 million total.

Women have higher sickness rates than men, and frequency is greater than severity. The rates

are higher in most diseases, and they show an excess absenteeism rate. The rates are higher in married women.

Probably not more than 10% of women in industry are affected by dysmenorrhea; there is nothing significant during the periods. There are no good data with reference to the effect of toxic substances or physical effort.

It is difficult to determine the effect of work upon pregnancy because of the many variabilities. Traumatic abortion is not a major problem in compensation.

There is no reliable evidence that women are more susceptible to occupational diseases than men —probably they do not have the same exposures. Certainly women are not exposed as much as men to accidents.

It was stated that there is no major fatigue problem so far as working women are concerned.

As to what the medical department can do about these problems, it should find out the reasons for the excess rates among women. If home duties are responsible, fewer hours of work should be permitted. There should be menstrual studies, with due concern as to the work, absenteeism, habit, and seasonability. There should be established a frank policy on pregnant women in industry.

Finally, it is of interest to say that there has been no correlation established between size, weight, and strength, or the ability to do weight-lifting.

DR. CLARENCE SELBY spoke of "The Chronically Ill."

With reference to a large industrial experience among several hundred thousand employees, the trend appeared to be downward in appendicitis, pharyngitis and tonsillitis. Hernia appeared to increase during the war experience, as well as ulcers.

Heart disease did not appear to be significant, although motor disabilities fluctuated considerably, and colds were always high. Cancer, tuberculosis, and venereal disease appeared to show very low incidences.

Disease of the nervous system and the locomotor system, and cardiovascular diseases were the most imortant disabling diseases, although not the most important from the standpoint of mortality.

Wednesday Afternoon Session

DR. ROBERT C. PAGE spoke on "The Significance of Non-occupational Disability."

One of the most important points to emphasize before saying anything specifiic about this subject is to realize that employment has increased out of proportion to the population.

Domestic sickness rates exceeded the foreign, while injuries reversed this principle. Among the domestic groups were colds and influenza, gastrointestinal complaints, and arthritis; among the foreign complaints were malaria, influenza, colds and venereal diseases.

One of the things emphasized in the domestic service was the usual examinations of employees and the executives' examinations.

Differences between preventive and constructive medicine, and curative medicine were emphasized, the former being less costly and giving more tangible results, the latter being more costly and giving less tangible results.

MR. CHARLES DONAHUE spoke on the subject of "Health in Collective Bargaining."

Several examples were given of unions securing medical care programs and hospitalization through collective bargaining. Such services are now procurable through many different industries, covering about three million workers.

There is a trend toward such protection rather than other requests—and the emphasis will probably increase.

Details were given on various types of labor-sponsored clinics and programs in different kinds of industries.

Peaceful and constructive human relationships and advances in industrial medicine can come through collective bargaining activities.

DR. JOHN J. WITTMER discussed "Cash Sickness Benefits."

Sick benefit plans are the answer to the popular demands of workers for coverage, but we need to restrict the benefits to get people back to work and full pay—the use of both employer and state funds is dangerous.

There are some who want sickness coverage so badly that they permit the government to play a part in that attainment. The real issue is the best of medical care obtainable. Preventive medical services should be included and the methods should be actuarially sound.

It should be realized that industrial medicine is experienced in prepaid medical care, and that the demands of labor can be met without government intervention.

DR. JAMES MCVAY spoke on "Voluntary Insurance Plans."

The purpose of these plans is to permit some to remove the financial obstacles to needed services.

There are three general classes: those giving services; those giving indemnity; and a combination of the two.

In 1938 there were three such plans, while in 1948 there were 45. There are now about 10 million people covered by such plans. The details of the benefits were outlined. Also to be considered were various grants in aid to help services and hospitals.

The benefits include (1) surgery and hospital only; (2) surgery anywhere; (3) medical treatment in hospitals; (4) medical treatment in home, office, plus examinations; and (5) general hospital care.

Many plans include three or more of the above. Most subscribers need help on major problems. Requirements were outlined for approval of plans.

MR. W. J. HOLLOWAY, JR., completed the panel discussion on the subject "National Legislation."

There are some 1500 bills that have been introduced, and copies are available for study. Amendments have been made in the Longshoremen's and Harbor Workers' Compensation Act, providing for panels, fee schedules, and increased benefits. Similar changes have been made in the U. S. Employees' Compensation Act concerning increased benefits. As to present national insurance proposals, these have not been considered seriously by the administration. It is expected that other drafts will be made.

BOOKS

Occupational Medicine and Industrial Hygiene

OCCUPATIONAL MEDICINE AND INDUSTRIAL HYGIENE. By RUTHERFORD T. JOHNSTONE, A.B., M.D. The C. V. Mosby Company, St. Louis, Mo., 1948. Price $10.00. 604 pages, with 117 illustrations.

DR. JOHNSTONE has here assembled in a very easily read style, with interesting case histories and personal experiences, a great deal of the information which should be of value to the general practitioner engaged in industrial medical work, as well as to others who specialize in various parts of this field. There is so large and diverse a group of activities in the field of occupational medicine and industrial hygiene, that it is almost impossible to include all of the essential information in one volume. However, the author has done this very well in this instance, especially considering the clinical aspects of industrial medicine.

The book is divided into four parts: Part One, on general considerations concerning various aspects, especially the administrative portions, of occupational medicine; Part Two, on numerous chemical compounds; Part Three, on the metals; Part Four, on the dusts, including the dermatoses, and various other subjects, along with industrial hygiene.

Some of the outstanding portions of the volume which will prove of particular interest are the general discussions of the background and the future of industrial medicine, the functions of the industrial physician, the teaching of industrial medicine, the basic approach to a diagnosis of occupational disease, and various other chapters in Part One. The brief review of organic chemistry which is given in connection with Part Two in the chapter on industrial solvents and also with respect to other chemical compounds, should be of great use to those who have forgotten their organic chemistry. The chapter on tuberculosis and pneumonia in industry, in Part Four, will be of considerable help to the general practitioner who ordinarily might not be informed on the important points given in this chapter. The chapter on synthetics, dealing with rubber and other synthetic compounds, is important; and in the appendix the tabulation of chemicals used in common trade-name products is of value.

There will be those who may take issue with DR. JOHNSTONE in some of his statements regarding the apparent responsibility of industrial medicine: "We have realized that the worker is a member of society, whose working, playing, and living is a 24-hour problem. Such a concept entails consideration of all his faculties, his capacities as well as his deficiencies. It includes a program which will safeguard his hearing, his vision, his nutrition, his skills, aptitudes, experience, intelligence, and emotions. It is the object of industrial medicine to utilize the cardiac, the epileptic, the cripple, the blind, the elderly, and all those who desire to work instead of being forced to accept the beneficience perpetrated upon him by an unwitting government. Man's work is related to his home, his social environment, his philosophy, his economics, and his happiness. Adjustment of these relationships in the largest segment of our adult population can be achieved by utilizing the facilities which industrial medicine has to offer." And of course, the reviewer would agree entirely with this as against a government program—however, this sort of program for industry must be selective, and certainly industry should not be made responsible for things which happen outside industrial walls. Many industries have found it necessary to do these things because of segregation and isolation in small communities; but where there are other facilities available, such as in large municipalities or in urban communities, good use can be made of the ordinary medical and surgical facilities which are thus at hand. In other words, industry cannot be responsible for all of the lives and doings of its employees, through its industrial medical program; this would be so costly that industrial medicine would be an impossibility.

Several chapters are given over to a general consideration of industrial hygiene, with information that should be of distinct value to the general practitioner for a general understanding of industrial hygiene engineering principles.

The publishers have done a very fine job in typography and general arrangement, including the paper and binding. The illustrations are excellent.

This volume will be a very useful reference for anyone who is engaged in any kind of industrial medical work, and should appeal particularly to the commissions.

—C. O. SAPPINGTON, M.D., DR.P.H.

LETTERS

Vienna Post-Graduate

TO THE EDITOR: Post-Graduate Courses for Physicians and Surgeons are now being offered by the University of Vienna. For the first time since the war, the University of Vienna is opening its post-graduate school to doctors from overseas and is able to provide for their suitable accommodation while studying. We have received a great many inquiries on the topic for, as you doubtless know, clinical facilities for the post-graduate study of medicine and surgery are better in Vienna than anywhere else in the world. Furthermore, Vienna continues to offer unique opportunities for the studies of numerous specialties, branches of pathology being among them, to mention but one classification. Detailed information can be obtained from us in any specific case. The system for booking accommodations is extremely well organized, being handled exclusively in Vienna by the Oesterreichische Verkehrsbureau which cooperates with all travel agents.

—RUDOLF F. MATTESICH,
North American Representative,
48 East 48th St., New York 17.

Low Back Pain

TO THE EDITOR: The symposium on "Low Back Pain" as reported in the January issue of INDUSTRIAL MEDICINE was very enlightening. However, there are two points I would like to include which, in my opinion, were lacking in your discussion: (1) prophylaxis; (2) use of local anesthetic agents. PROPHYLAXIS—The industrial physician of a small plant does not have an engineering department to assist him in his work. For this reason the physician must also be a safety engineer. I have tried with great success to avoid back pains by teaching personnel how to place their bodies and feet in lifting, pushing and pulling operations. Generally speaking, the best position for these mechanisms is

to have the person place his feet 18 to 24 inches apart so that the center of gravity may be low as possible—the knees bent to an obtuse angle of 145° and the trunk tilted slightly forward. In this way stress will be taken away from the most vulnerable point—the lumbo-sacral area. TREATMENT—A small industrial plant can not afford to have expensive equipment, and yet the employee who has a low back pain should be returned to work as soon as possible. For this reason, all employees who report to me at the General Diaper plant with a complaint of pain in the back without any history of severe direct trauma and no neurological signs receive the following therapy: If a trigger area is found, 1% procaine is injected for a distance of one to one-and-a-half inches in a fan-like manner. If no trigger-like area can be ascertained, the painful area is sprayed with ethyl chloride up to but not including the appearance of frost for a period of three to five minutes. With these methods I have been able to return to work without any recurrence of pain approximately 25% of cases, and an additional 50% were returned to work without any loss of efficiency but still having pain for a period up to three days. The remaining 25% had to have additional investigation and therapy.

—J. M. KRICH, M.D.,
Woodhaven, New York

Industrial Medical Fees

BACK in 1912, California adopted a workmen's compensation law, which provided that a workman injured in the course of his employment should become a charge against the employer. The law stated that the employer must provide the injured employee with full medical and hospital care and must also pay compensation to him to offset the loss of wages caused by the accidental injury. The physicians of that day were opposed to this new law, seeing in it a beginning of regimentation for the profession. In the 36 intervening years, compensation insurance has grown to a large industry in California and total insurance premiums, not including the cost of self-insurance by large employers, run to more than $40,000,000 a year. Each injury requires medical attention and it has well been said that the physician is the keystone of the entire industrial accident structure. Nonetheless, we sometimes wonder if the doctors of 1912 weren't really right in their opposition to the original statute. It seems that over the period of years the doctor has been the forgotten man in the care of industrial accidents. He provides the medical care. He evaluates the injury from the point of view of loss of time, loss of function and loss of potential wages. His diagnosis and prognosis may make or break an insurance underwriter. Yet, he is the one cog in the industrial accident machinery which cannot act of and by itself. If he thinks he is entitled to a higher fee for his services, he must politely put his hat in his hand and ask permission from the insurance companies. And the underwriters are in business to make money, not to pay doctors. Hospitals, surgical supply houses, pharmacists and nurses may increase their fees or charges and the higher amounts are paid by the insurance companies; the doctor is always told that there is a fee schedule in effect which limits his fee. In many cases, his services are solicited at fees 25 to 50% less than the established schedule. Occasionally, in exceptional circumstances, he is paid more than the printed schedule, but these occasions are few and far between. Ever since 1914 the Industrial Accident Commission of the State of California has maintained a schedule of medical and surgical fees as a guide to both doctors and employers. Originally brief, with only a few procedures listed, the schedule was augmented and the fees increased late in 1946, *after the California Medical Association had put in more than four years in the effort.* The increase in fees at that time was bitterly opposed by some insurance carriers; to the credit of others, some were agreeable to the adoption of fees more nearly in line with 1946 than in 1924, the date of the then existing schedule. Again in 1948 the C.M.A. asked the Industrial Accident Commission to review the fee schedule now in effect and submitted a proposed schedule of fees believed to represent more nearly a fair level as of this time. The Commission has now tabled the Association's petition and in doing so has adopted a resolution which holds that the Commission has no "authority to enforce any medical fee schedule adopted by it." The California Medical Association does not hold the same belief, but since the Commission is the only official body which has ever published a fee schedule which has been recognized statewide, the Commission's own beliefs must prevail. The ruling of the Industrial Accident Commission went one step beyond the tabling of the current petition. It called for the abandonment of the present fee schedule after June 30, 1949. Thus in one breath the Commission has ruled that it has no authority to enforce "any medical fee schedule" and that it will enforce the present schedule until next June 30. It seems reasonable to ask, if the Commission believes it now has no authority to enforce a fee schedule, how it can enforce the present one until next June 30. Acting on this reasoning and the Commission's ruling, the Council of the C.M.A. has voted that a copy of the 1948 proposed schedule of fees be sent to every Association member, with the suggestion that these fees be applied in all industrial accident cases on and after February 1, 1949. If the Industrial Accident Commission has no authority to enforce a fee schedule ,and no intention of doing so, chaos is the only result we can foresee when the present schedule is dropped. The Council's move is intended to place the members of the Association in a proper position to bargain individually with insurance carriers when the lid is taken off industrial fees and the sky becomes the limit. The Association has worked long and hard to produce a schedule of fees which are believed to be fair and equitable in these cases; it is not asking anything exorbitant but it is asking that fair and just fees be recognized. The laborer is certainly worthy of his hire. Copies of the new proposed schedule have been sent to all members. Additional copies may be had on request. If they are used by the doctors of the state, an adjustment of industrial accident medical and surgical fees may be realized without the formality and indignity of the hat-in-hand petitioner who, like Oliver Twist, is only asking enough to sustain himself.

Editorial in *California Medicine*, February, 1949.

INDUSTRIAL MEDICINE

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The Basis of Health

DR. WM. R. P. EMERSON'S article in this issue, "A New Approach to the Problem of Impaired Health," is reminiscent of the work of DR. HALSTEAD G. MURRAY, who in 1928 discussed his findings in doing the examinations of the executives of the Dennison Mfg. Company, Framingham, Massachusetts; and of the work of the Boston Dispensary approximately 20 years ago, when a health examination clinic was established; and, last but not least, of the work of DR. EMERSON himself, which has been recorded in the literature, in articles and books, since about 1930.

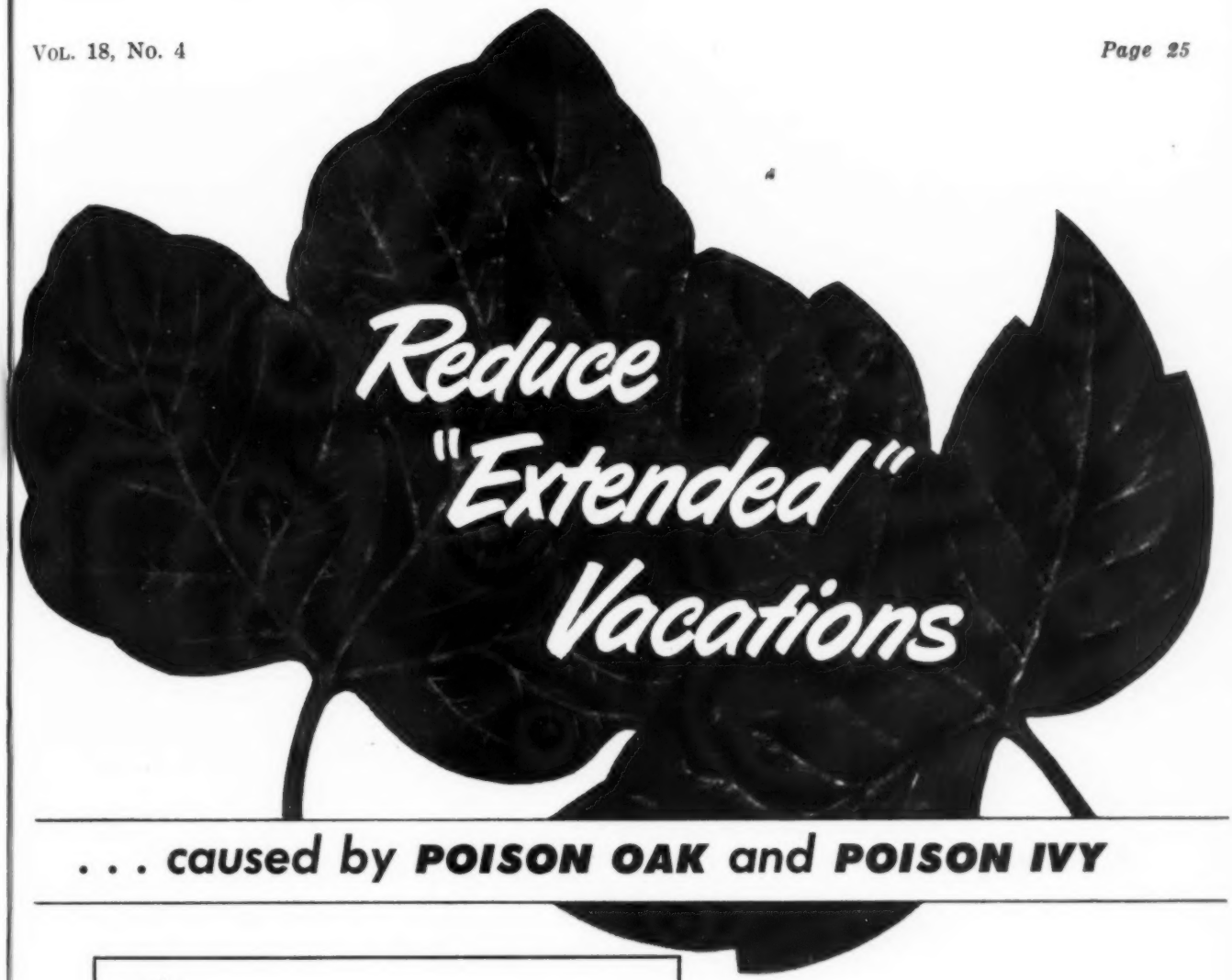
Gradually there has been built up a conception of individual physical fitness as a positive condition of health rather than the mere absence of disease. Recently, for example, the *Journal of the American Medical Association,* commenting on physical fitness as the physician sees it, made the following statement: "In the periodic health examination the emphasis must be placed 'on the dynamic state of the individual rather than on the anatomic aspects of illness.'" This principle has been used for some time by a few physicians in connection with the periodic examination of employees. It has been applied specifically to the health audits of executives.

There is still, however, on the part of most physicians a tendency to adhere to the principles of pathology and a discovery of pathological changes. This has been confirmed particularly with respect to the findings from recent examinations of executives in various industrial groups. It is what DR. EMERSON means in the first part of his article when he says "A true health examination is not now available," and then further states that the examination usually given is to detect disease by a physician trained for that special purpose, and that if the physician finds no disease, the patient is assured that he has no sickness and no cause for worry.

It appears on analysis of the data resulting from "health examinations" of executives, that one of the things which is left out from such examinations is a thorough inquiry into health habits. Apparently few physicians are aware of the fact that this is rather important in a health appraisal. According to the experience of DR. EMERSON, the incidence of faulty health habits was "occasioned chiefly by conditions outside rather than during working hours." In the executive class, when health is impaired, the higher powers, judgment, initiative, vigor, and personality, are first affected. To safeguard these qualities means efficiency in its most significant aspects. It also means the safeguarding of the payroll, since it is for these higher qualities that the higher salaries are paid.

With further reference to the economic phases of this examination, it is easy to understand how the Blue Cross would be interested in having its executives and employees given this type of examination. It is, of course, common knowledge that the Blue Cross is underwriting coverage for sickness and hospitalization, and, since charity begins at home, it is natural that it should be interested in having its own executives and employees examined periodically so that sickness might be prevented—assuming that the employees and executives are covered under the plan. Perhaps however, it would be more to the point economically if it were possible for the Blue Cross to have its assureds as well as it employees periodically exposed to this type of true health examination. Certainly the insurance companies which do any coverage concerning hospitalization and sickness and health insurance, should be interested in extending to their assureds this type of protective measure; in the long run, and even in the short run, for that matter, it ought to be a good paying proposition.

We can foresee for this type of examination, when universally applied and properly administered, a very important place as an economic instrument in the hands of those who are interested insurance-wise in the prevention of illness. But it would also seem that the extension of this procedure would be of great significance generally, and of special significance industrially.



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NEWS, COMMENT, OPINION

Like a Tumor

IN SPITE of all our vaunted knowledge, in spite of recent conferences sponsored by industrial and medical groups, and in spite of the personal experience of every individual who has had an alcoholic in his family, or perhaps was an alcoholic himself, or who knows an alcoholic who was "cured," we shall accomplish little unless we keep very firmly in mind the fact that this psychosociobiological illness is comparable visually to tumors, including cancer.

—ROBERT B. SELIGER, M.D., in *J. So. Med. & Surg.*

Tuberculosis Hazard

THE effect of the occupational environment upon the incidence and production of tuberculosis has been given careful study over many years. It is a fact that nurses and medical students are often subject to contact with an open carrier and therefore their respective occupations constitute a hazard peculiar to their occupation. As far as all other occupations are concerned, the evidence is, by and large, to the contrary.

—RUTHERFORD T. JOHNSTONE, M.D., in *Am. Rev. Tubere.*, October, 1948; quoted in *T. B. Clip Sheet*, March, 1949.

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Tuberculosis Surveys

FOLLOWING a report in 1945 of a mass examination of workers in a particular factory, the examinations of many were repeated annually. The survey differed from one in America reported by Reid in that the annual examinations were voluntary and there were no pre-employment or factory-supported chest examinations. The results agreed with those of the American survey on these points: (1) a year is a suitable interval between surveys; (2) a marked diminution in the number of tuberculosis cases was found. This decrease seems to be due to at least two factors: (1) the discovery of the early observation lesion with the chances of its subsequent control; and (2) the diminution of the infector pool. Also, by finding cases before they have become sources of infection to their fellows and not, as is more usual if diagnosis has to wait on symptoms, after they have broadcast bacilli for many months or even years, the infector pool is prevented from being restocked. In this light the importance of mass radiography as a preventive measure is truly seen.

—W. P. DICK, *Brit. Med. J.*, April, 1948; abs. in *What's New in Industrial Hygiene*, 5:2, 6, 1948.

Executives' Health

EXECUTIVES of 16.5% of 333 business establishments surveyed recently are required to undergo periodic physical examinations, the National Industrial Conference Board reports. Approximately a third of the companies provide examinations

for those executives who wish to take advantage of the service. Although the survey showed that a variety of professional and non-professional personnel are employed in company medical departments, medical directors were found in more than 50%, and assistant medical directors in 13.5%. More than 1,900 graduate licensed nurses were found to be assisting physicians in the companies. Dentists were found in 41, while x-ray technicians are employed in 50 companies, medical laboratory technicians in 46, and physical therapists in 22. Seven companies employ pediatrists, and 83 utilize the services of first-aid attendants together with 20 practical nurses.

—*Health on the Job*, January, 1949.

New York Times

COMPLETE modernization and expansion of medical facilities, with a view toward greater personalization of its services, is now under way at *The New York Times*, where a staff of 11, consisting of doctors, nurses and technicians, watches the health of approximately 4,000 workers. Breadth of space and warmth of color are being utilized to de-emphasize the usual hospital and clinic atmosphere in five examination rooms, a surgery, waiting room, and an eye, ear, nose and throat room, in addition to x-ray and fluoroscopic units. Expansion of the department approximates 1,000 square feet of space, including enlargement of waiting facilities and laboratory and the addition of the x-ray and fluoroscopic units, plus two examination rooms. Thus, the department, which was inaugurated in 1921, with one doctor and one nurse, will occupy in early February an entire wing of the 13th floor which will be completely insulated, air-conditioned, re-designed and re-decorated, including new furniture throughout, at a cost in excess of $50,000. The *Times* medical staff, under the direction of DR. DAVID H. GOLDSTEIN, during the first 11 months of 1948 handled 13,787 cases. DR. GOLDSTEIN is also assistant professor of preventive medicine at New York University. Evidence of the *Times* management's interest is borne out in a recent statement in which it paid high tribute to its medical care. "We have long been convinced of the merits of a medical department," the statement said. "The dividends are in better employee health, high employee morale, low labor turnover, reduced accidents, and reduced costs of insurance premiums."

—*Health on the Job*, January, 1949.

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[*From ARCHIVES OF DERMATOLOGY & SYPHILOLOGY, April 1942, pp. 670-675*]

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Fellowship

YALE University, New Haven, and the New Departure Division of the General Motors Corporation in Bristol announce the joint sponsorship of a one-year clinical fellowship for a graduate course in occupational medicine to be directed by the Yale Institute of Occupational Medicine and Hygiene and the New Departure Division in cooperation with the state department of health. A short period of orientation in the Connecticut Bureau of Industrial Hygiene will be included in the section on industrial hygiene and safety. Candidates must be graduates of a class A medical school and rank in the upper two-thirds of their classes. At least 12 months' rotating internship, or its equivalent in

hospital training, is required along with an interest in occupational medicine and hygiene, public health, health conservation and case-finding programs. A license to practice medicine and surgery in Connecticut is also required. A candidate who completes his fellowship satisfactorily will be awarded a certificate. Further information concerning the new clinical fellowship may be obtained from the Institute of Occupational Medicine and Hygiene at Yale University.

—*J.A.M.A.*, February, 26, 1949.

Experimental

EIGHTY per cent of the workers in Great Britain are employed in factories, workshops, offices, and stores that employ less than one thousand workers. Individually, these small organizations cannot afford to provide industrial medical services of the kind now common in large establishments. Interest therefore is attached to the experiment that is being made in Slough in the South of England of group provision for numbers of small firms operating on, or in the vicinity of, a large trading estate. For each of their employees, firms pay a small yearly fee. The medical service is a central clinic, with facilities for resuscitation, x-ray, physiotherapy, chiropody, and orthopedics. There is a mobile dressing station, and ambulance post, and attached to the services is a recuperative home. The scheme is not yet self-upporting. Financial grants have been made by various foundations and firms.

—*Current Medical Digest*, February, 1949.

American Smelting

AT AMERICAN Smelting & Refining Co., of which the El Paso Smelting Works, a lead and copper smelter, is a unit, a medical department under the direction of DR. SHERMAN S. PINTO, whose office is in Denver, Colorado, has been developed and staffed with personnel especially trained in the detection, treatment and prevention of occupational diseases. All employees are given periodic physical examinations. The major function of the hygiene department is to determine the conditions of the air and to detect causes of discomfort, if any, that may exist in the plant. Samples of the solids and gases in the air are collected periodically by a hygienist to determine whether atmospheric contamination exists and if so to what extent. The hygienists assist the ventilation engineers and metallurgists in finding methods to provide clean fresh air. The hygiene department includes industrial hygienists and chemists who work in cooperation with a medical director and with engineers thoroughly trained in ventilation.

—*Industrial Hygiene Newsletter*, March, 1949.

New Course

THE INSTITUTE of Industrial Medicine of the New York University-Bellevue Medical Center, inaugurated a course in "Medicine in Industry" for third-year students at the New York University College of Medicine, beginning March 3. Extending over 12 weeks, the course will include lectures in dust diseases, lead, solvents, dermatoses, psychiatry in indus-

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(1 Freed, J.A.M.A., Feb. 8, 1947)

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try, physiology of respiration as applied to dust diseases, organization and administration of industrial medical departments, physical factors in the industrial environment, the role of research, and physical examinations. In addition to DR. A. J. LANZA, Chairman of the Institute, lecturers will include DR. DAVID H. GOLDSTEIN, assistant professor of preventive medicine, and medical director of the *New York Times;* DR. NORTON NELSON, director of the laboratory of industrial toxicology, and associate professor of preventive medicine (industrial medicine); DR. E. D. PALMES, assistant professor of preventive medicine (industrial medicine); and DR. WILLIAM LEIFER, associate clinical professor of dermatology; all of the New York University-Bellevue Medical Center; and DR. LYDIA GIBERSON, psychiatrist, on the staff of the Metropolitan Life Insurance Company.

Humble Oil

THE Medical Division of Humble Oil & Refining Co. and Humble Pipe Line Co. makes no attempt to play the role of a family physician to the company's 19,000 employees. Their location alone would make this impossible, for while Humble's activities are centered in Texas, the company also has operations in California, New Mexico, Louisiana, Mississippi, Alabama, Georgia, and Florida. The program is so organized that it functions as part of essential medical service in communities wherever employees live, in cooperation with the medical profession, and with county and state health agencies. To every Humble employee, no matter where he or she may be, the Medical Division offers such services as: a physical examination to determine where his or her capabilities may best be utilized; periodic check-ups; special examinations should conditions warrant; treatment of injuries occurring on the job; rehabilitation from such injuries should it be necessary; treatment of minor illness; counsel concerning illness requiring absence from work; medical advisory service; advice on job sanitation and, in company field communities, on sanitary living conditions. Preventive medicine, of course, is the backbone of the medical program. To accomplish the objectives of such a program, the Medical Division has worked with civil engineering personnel in developing and carrying out sanitary codes for field communities. These provide for regular bacteriological analyses of water supplies; insect and rodent control; drainage; establishment of outdoor playgrounds; and other factors contributing to the better health and well being of the employee and his family in the company camp. The division is constantly engaged in eliminating occupational hazards and protecting workers against occupational diseases. However, most of the work done along this

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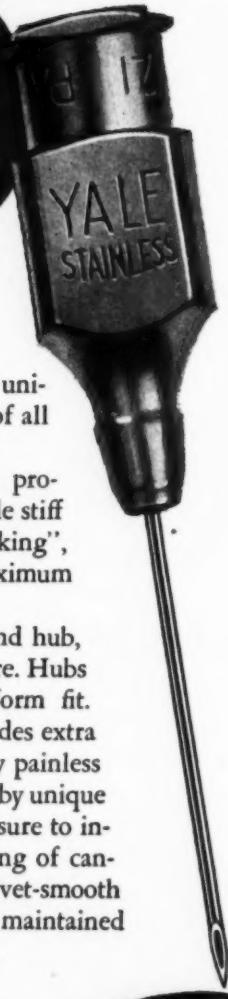
DIVISION OF JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.

Why B-D NEEDLES are always UNIFORM



No matter what the gauge or size, uniformity is an outstanding characteristic of all B-D NEEDLES.

Hyperchrome stainless steel tubing provides the optimal compromise in a needle stiff enough to hold a point without "fish-hooking", and flexible enough to withstand maximum bending without breaking.

From point to junction of cannula and hub, B-D NEEDLES hold practically true bore. Hubs are micrometer-gauged to assure uniform fit. Basic design of B-D needle points provides extra lateral cutting edges to achieve relatively painless penetration. Cannula and hub are joined by unique application of parallel longitudinal pressure to insure against leakage and against crimping of cannula. Buffing and finishing produce a velvet-smooth surface . . . and inspection is rigidly maintained throughout every phase of manufacture.

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Made for the Profession
Since 1897

line has been on specific toxicological problems. Special examinations are made to determine the fitness of employees assigned to jobs where there may be special health hazards, and re-examinations are performed when needed.

—*Industrial Hygiene Newsletter*, March, 1949.

Company Clinic

LACK of doctors and dentists in Bemis, Tennessee, bothered Bemis Bag Co. executives, because so many of the townspeople work for them. The company solved the problem, not by hiring medical men to care for out-of-plant ailments, but by putting up a $25,000 medical and dental clinic. With good offices and good equipment available, Bemis became a desirable place to practice, and the company soon had both a doctor and dentist as tenants of its clinic, at nominal rental. Now Bemis citizens are healthy, and Bemis Bro. Bag Co. is a good friend of the town.

—*Modern Industry*, January 15, 1949.

Doctors of Infamy

DOCTORS OF INFAMY," published by Henry Schuman, Inc., Publishers, 20 East 70th Street, New York 21, is essentially straight documentary, consisting of testimony given at Nuremberg in the trial of the 23 German medical men accused of atrocities under the guise of medical experimentation on Jews, political prisoners, prisoners of war, women, the aged and feeble, and other groups. An introductory essay by Dr. Andrew C. Ivy, Vice-President of the University of Illinois, concludes with the statement that: "What happened to the medical profession of Germany is stern testimony to the fact that acceptance of or even silence before the violation of sacred professional ethics, the service by medical men of any goal but truth for the good of humanity, can lead to dishonor and crime in which the entire medical profession of a country must in the last analysis be considered an accomplice." Other chapters are contributed by Brig. Gen. Telford Taylor, Chief of Counsel for War Crimes; Dr. Leo Alexander, Consultant to the Secretary of War at the Nuremberg trials; and Albert Deutsch.

Western Association

THE WESTERN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS will hold its Eighth Annual Meeting on May 7, 1949, at the Biltmore Hotel, Los Angeles. Feature of the morning session will be a Panel Symposium, with audience participation, on the subject "State Compensation Insurance Laws, Administration, Procedures, and Related Problems," FRANK J. FILIPPE, Superintendent of Claims, State Compensation Insurance Fund, presiding. In the afternoon HOMER S. ELMQUIST, M.D., will discuss "Use of Wire in Inguinal Herniorrhaphy," IAN MACDONALD, M.D., will speak on "Occupation and Trauma in Relation to Cancer," J. E. KIRKPATRICK, M.D., will present "Injury vs. Gout," WALTER Z. BARO, M.D., will offer the subject "Industrial Head and Back Injuries as seen from a Neurological and Psychiatric Viewpoint," and FENN POOLE, M.D., will summarize the Detroit meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS under the title "Highlights of 1949." JEROME

SHILLING, M.D., is President of the WESTERN ASSOCIATION, and CHRISTOPHER LEGGO, M.D., is Secretary.

Socialized Expectancy

FREDERICK KUH reports in a contemporary journal that hospitals in England are exceedingly crowded under universal and compulsory health insurance. Expectant mothers, he says, are being advised to make reservations 10 months in advance for the delivery of their offspring. This program involves long-distance forecasting of a higher degree of accuracy than Dr. Gallup or Elmo Roper ever attained. To achieve it, the British government will no doubt set up a forecasting bureau to take care of such questions, thereby increasing once more the unexpected outlays involved in socialized medicine.

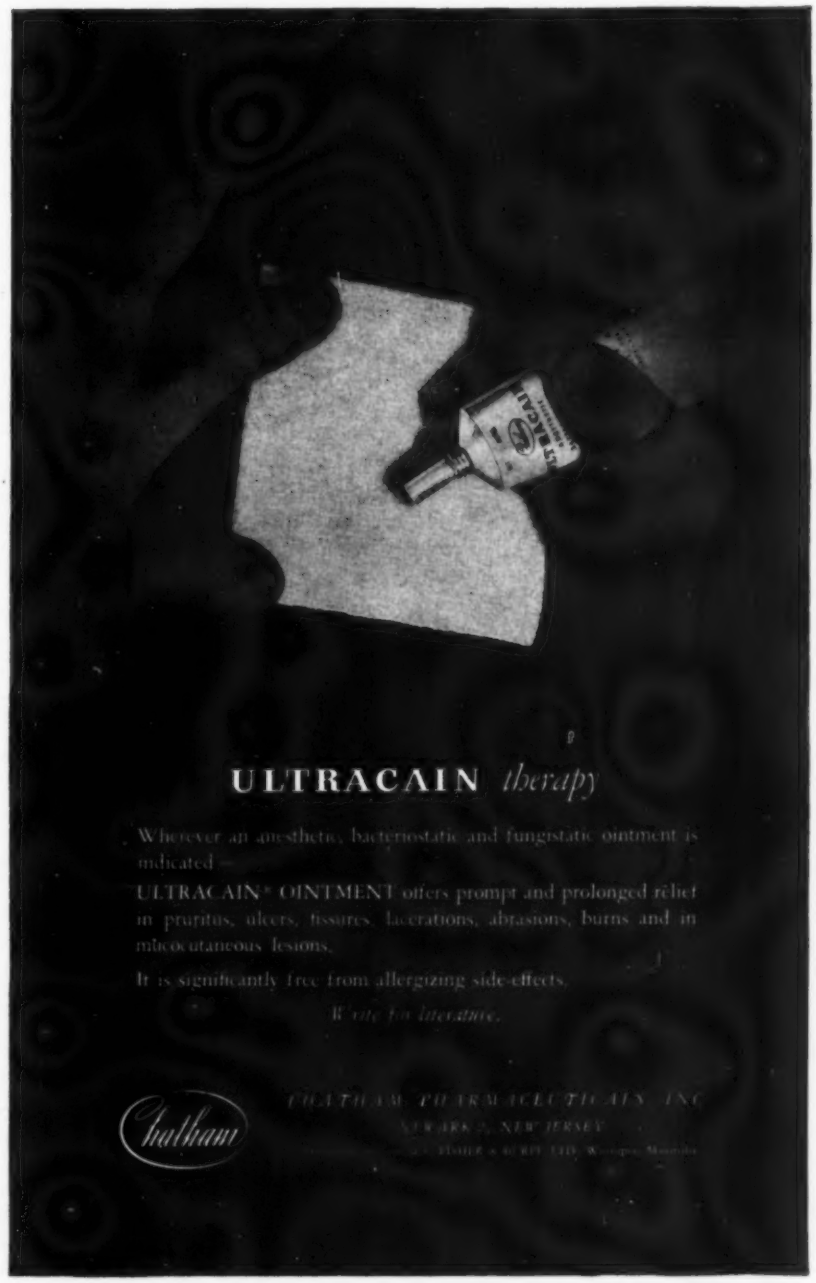
—*Chicago Daily News*, January 3, 1949.

Seasickness Preventive

THE ARMY Medical Department, in conjunction with civilian investigators, has sponsored development of a new drug, "Dramamine," that acts as both a cure and preventive of seasickness or motion sickness. Credit for the original research is given to Dr. Leslie N. Gay, of the Protein Clinic of Johns Hopkins University Hospital, Baltimore, who first began research on the drug in 1947, and Dr. Paul Carliner, also of Johns Hopkins. In experiments recently completed, almost total cure or prevention of seasickness in all degrees of severity was obtained among more than 400 passengers aboard an Army transport in heavy seas. Both the preventive and curative values of the drug in relation to seasickness were investigated. The physicians reported that of the men who received preventive treatment, less than 2% became seasick. In the therapeutic tests, the drug failed to give complete relief in only 3% of cases. During the extremely rough voyage, a total of 418 cases, including relapse of moderate to violent seasickness, were treated with Dramamine. Complete relief was obtained in 407 cases, with partial relief or failure in 11. Careful observation was made for unpleasant symptoms, but in not one instance, even though thousands of capsules were administered to more than 300 men, was there a complaint or evidence of discomfort which necessitated discontinuance of treatment. All previous remedies had been combinations of various drugs, such as scopolamine, one of the barbiturate preparations. Dramamine is a single chemical which is believed to have a direct effect on the vomiting center in the brain. It is a member of the chemical family of benadryl and pyribenzamine, which are used in the treatment of certain allergic conditions. The complete chemical name is beta-diaminoethyl benzohydryl ether 8-chlorotheophyllinate.

Program for the Aged

COLONEL WESLEY C. COX, MC, Chief of the Army Industrial Hygiene Laboratory and Consultant to the Surgeon General of the Army, addressed the meeting of the Federal Council of Personnel Administration in Washington, January 13, 1949, on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the subject, "Problems of an Aging Population: Retirement Policies for Civilian Employees of the Federal Government and Employees of American Industries." He emphasized the danger of losing the experience and knowledge of older employees who are forced to retire because of "chronological age." He advised setting up "continuing boards" consisting of personnel management, industrial safety engineers, job supervisors, physicians, psychiatrists and psychologists by all industries to evaluate the physical and mental attributes of employees, thereby "assuring the optimum placement of individuals," and avoiding their placement in jobs they are unable to do because of age or incapacity, with the retirement of employees only when they are incapable of carrying on any useful job. Industry and the industrial medical program have a responsibility for the provision of suitable jobs for the aging on the basis of their psychological age. This is now being accomplished in the more alert industrial organizations by means of expanded pre-placement medical, physiological and psychological examinations, and by special periodic health maintenance examinations, interviews, and consultations.

External Cod Liver Oil Therapy
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In PEDIATRICS for the treatment of Diaper Rash, Exanthema, Chafed and Irritated Skin caused by Urine, Excrements or Friction, Prickly Heat and in the nursery for General Infant Care.
Fatty acids and vitamins are in proper ratio, thereby producing optimum results. Non irritant, acts as an antiphlogistic, allays pain, stimulates granulation, favors epithelization. Under Desitin dressing, necrotic tissue is quickly cast off. Dressing does not adhere to the wound. In tubes 1 oz., 2 oz., 4 oz., and 1 lb. jars.
Desitin Medicinal Dusting Powder is super fatted with crude cod liver oil in a non irritating powder base. Indications: In infant care in the treatment of IRRITATED SKIN, SUPERFICIAL WOUNDS, DECUBITUS, INTERTREGO, PRURITUS and URTICARIA. In 2 oz. Shaker-Top Cans.
Professional Samples on Request
For the Medical Profession
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CHEMICAL COMPANY
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Grocer's Itch

GROCER'S itch, formerly known as industrial dermatitis, and caused by handling certain spices, is now classed as the most prevalent occupational disease in South Africa.

—*New York Herald Tribune*, December 19, 1948.

DR. PILGRIM

BUSY with many reports and routine and unusual laboratory procedures....AND then enroute to Detroit where visiting DRS. RAY HUSSEY and CLARENCE SELBY, with discussion of various phases of workmen's compensation problems; and having luncheon with DRS. SELBY and LUTZ and MESSRS. ROBERTS and MOHLD; and seeing BILL FULTON and his new set-up in the streamlined medical department, and visiting the General Motors library.... AND then to the Birmingham Village Playhouse to see "John Loves Mary," a production not too interesting but well done by the Village Players; and later on with the LINDS, EDBERGS, HANNAS, and MOFFITTS, at an evening of music in which MRS. EDBERG and PILGRIM were the contributors.... AND back to Chicago, reading mysteries enroute; and to the desk, with many problems and projects; and reading where Al Jolson has given to the Cedars of Lebanon Hospital at Los Angeles a two-acre country estate including a 14 room house and cottage, which property, valued at $160,000, will probably be sold and the money devoted to financing a 100-bed wing of the hospital; and thinking, thus do those who entertain share of their returns....AND occupied with looking over the articles in the industrial medical literature during the year of 1948, there being many of considerable merit ....AND to a large printing company for an inspection and conference on a possible health problem, the company being desirous of avoiding any difficulty, which attitude is indeed much to be encouraged. . . . AND listening with great pleasure to the New York Philharmonic in Tschaikowsky's Sixth Symphony, and Hermann's "The Devil and Daniel Webster,"

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U. S. Pat.

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For more rapid healing by their antipruritic, decongestive action • Accurate uniform dosage • No distilled water required • A valuable addition to Medicine Chests and First Aid Kits • Antiseptic • Astringent • Stable • No Lead • Economical • Accepted by U.S. Army & Navy •

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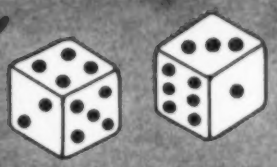
Compound Charcoal Tablets for Intestinal Dysfunction.

VALERIANETS-DISPERT®
Odorless Herbaceous Chocolate-coated Tablets for BETTER Sedation.

TRANSPULMIN®
In Pulmonary and Bronchial Conditions.

which is a lively suite.... AND visiting a recent medical set-up in a large manufacturing group, which is to be considered as one of the very best of the recent services, and here conferring with DRS. PETERSON and POHLMAN concerning their problems and experiences ....AND presiding at the regular monthly meeting of the Chicago Section of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, at which DR. JOSEPH HUBATA, Medical Director of Armour and Company, spoke well and interestingly on the subject "Packing House Magic," in which the many diverse products and procedures were described, and also the possible health hazards....AND reading of scientific advancements in many phases, among them the production of aluminum yarn, washable, non-tarnishable, highly elastic, and laminated with silk and spooled for textile mills; also concerning the world of the future in which Eric Johnston says we will be able to watch action being reproduced on a giant dome, resembling half the globe instead of a flat screen, taking in events as they occur and when they occur, also provided with stereophonic sound, as well as stereoscopic images; and next a prediction of Frank Stanton, of the Columbia Broadcasting System, to the effect that within the next 25 years radio sets will be carried about in one's pocket, being no larger than a pocket watch, powered by exposure to the sunlight—and one will be able to make his own broadcasts....AND listening with interest and wonderment to Toscanini's NBC Symphony playing Beethoven's Third Symphony, which was the acme of performance; and later to the New York Philharmonic in the playing of Haydn, Mozart,

PEN-PHETAMINE®
"A Natural"
for DYSMENORRHEA



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PEN-PHETAMINE has been used extensively in industry for the control of dysmenorrhea and the prevention of absenteeism attributable thereto. It has also been found of particular value in the symptomatic relief of SINUS HEADACHE, neuralgia, and other types of pain not associated with organic disease.

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the DAXALAN-DOME-PASTE BANDAGE TECHNIQUE...
as introduced by Dr. William M. Cooper
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DOMEBORO TABS are listed on page 376 of the "Manual of Dermatology" issued under the auspices of the National Research Council as *"Burow's Solution-Domeboro Tabs"*

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You may now prescribe
SOOTHING
Modernized — Simplified
Fresh and Stable
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in four forms
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Tablets • Packets • Powder
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and Prokofiev's Piano Concerto....AND to a meeting of the Committee on Legislation with respect to the employment of epileptics, and hearing much intelligent conversation, and many suggestions and recommendations....AND once again to hear and see the Chicago Business Men's Symphony Orchestra play a wonderful concert, especially delighting in their delineation of Brahm's Symphony No. 1 in C Minor, which was indeed ambitious but nevertheless well done; and also interested in the soloist Jean Casadesus, who played the Concerto No. 5 of Beethoven for piano—this young artist showing great flashes of splendor and much promise, as he is now only 21; and pleased to have DR. GLENN GARDINER sitting with PILGRIM during most of this concert ....AND making plans for visiting several manufacturing organizations, which have current problems; and at work on the proceedings of recent meetings, in which there is much to consider....AND again to see the medical mentor, who was pleased with the substantial progress made....AND engaged in correspondence and the working out of various phases of advisory activities, covering a wide range or interests....AND noting Sydney Harris' story in *Chicago Daily News* —apropos of Harry's now famous "s.o.b." The preacher was introducing the new deacon to a very deaf parishioner. "New Dealer?" asked the deaf man. "No," said the preacher, "This is the new deacon. He's the son of a bishop." The deaf man shook his head sadly: "They all are."

an entirely new approach to the treatment of pain

The intensity of pain is determined, in no small degree, by the patient's mood. It follows that any measure which will lessen your patient's preoccupation with his pain will actually make him feel his pain less.

EDRISAL contains two analgesics of established effectiveness. But, just as important, it also contains the logical anti-depressant, Benzedrine* Sulfate. Thus Edrisal not only relieves your patient's organic pain, but also relieves his anxiety over it. In Edrisal, therefore, you have a unique weapon—a double-barreled weapon—for the relief of pain.

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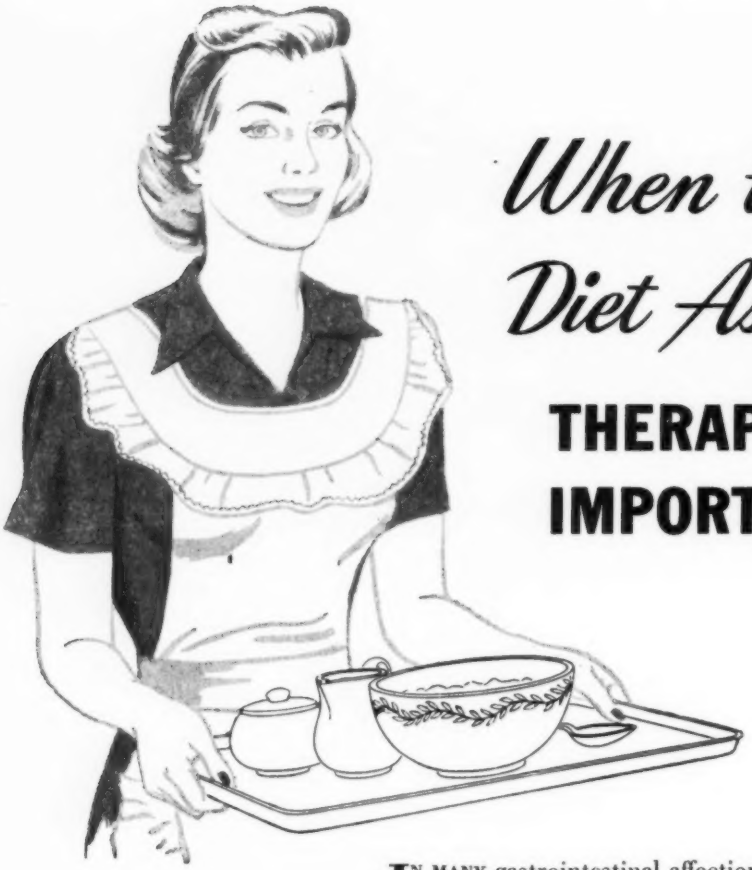
its dual action relieves pain • lifts mood

*T. M. Reg. U.S. Pat. Off. for racemic amphetamine sulfate, S.K.F.

Photo courtesy University of Pennsylvania Museum.



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Consisting of breakfast cereal, milk, and a teaspoonful of sugar, it provides an abundance of essential nutrients and caloric food energy. This time-honored combination is easily digested, bland, and readily utilized. It is well tolerated in the presence of many gastrointestinal conditions and offers the additional advantages of taste appeal, variety, ease of preparation in the home, and economy.

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Composite average of all breakfast cereals on dry weight basis.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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Treatment with Chloresium brought progressive closure of the cavity. Purulent drainage and odor stopped. Pinch grafts of granulation tissue at base were successful and cavity closed completely.

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*BOEHME, E. J.	The Treatment of Chronic Leg Ulcers	The Lahey Clinic Bulletin, 4:242 (1946)
BOWERS, WARNER F.	Chlorophyll in Wound Healing and Suppurative Disease	Amer. J. Surgery, LXXIII:37 (1947)
CADY, JOS. B. and MORGAN, W. S.	Treatment of Chronic Ulcers with Chlorophyll	Amer. J. Surgery, LXXV:4 (1948)
JOHNSON, HAROLD M.	Dermatologic evaluation . . .	Arch. Dermat. & Syph. 57:348 (1948)
LANGLEY, W. D. and MORGAN, W. S.	Chlorophyll in the Treatment of Dermatoses	Penn. Med. Journal, Vol. 51; No. 1 (1948)
RAFSKY, HENRY A. and KREIGER, CHARLES I.	Treatment of Intestinal Diseases with sols. of w. s. Chlorophyll	Rev. Gastroent Vol. 15:549 (1948)

NEW—Chloresium Dental Ointment and Tooth Paste now make chlorophyll therapy available for the treatment of Vincent's infections, gingivitis and other periodontal diseases.

FREE—CLINICAL SAMPLES

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I want to try Chloresium on my most resistant case. Please send me, without obligation, clinical samples and complete literature.

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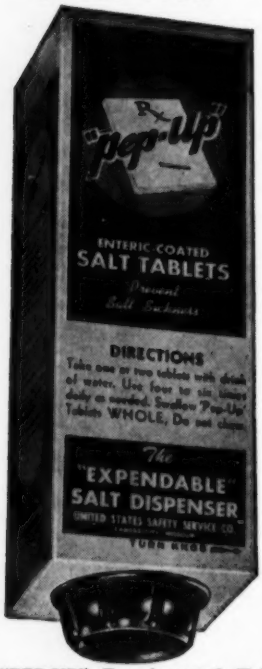

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Diabetics welcome "Spot Tests", (ready to use dry reagents), because of the ease and simplicity in using. No test tubes, no boiling, no measuring; just a little powder, a little urine—color reaction occurs at once if sugar or acetone is present.

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SAME SIMPLE TECHNIQUE FOR BOTH

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Write for descriptive literature

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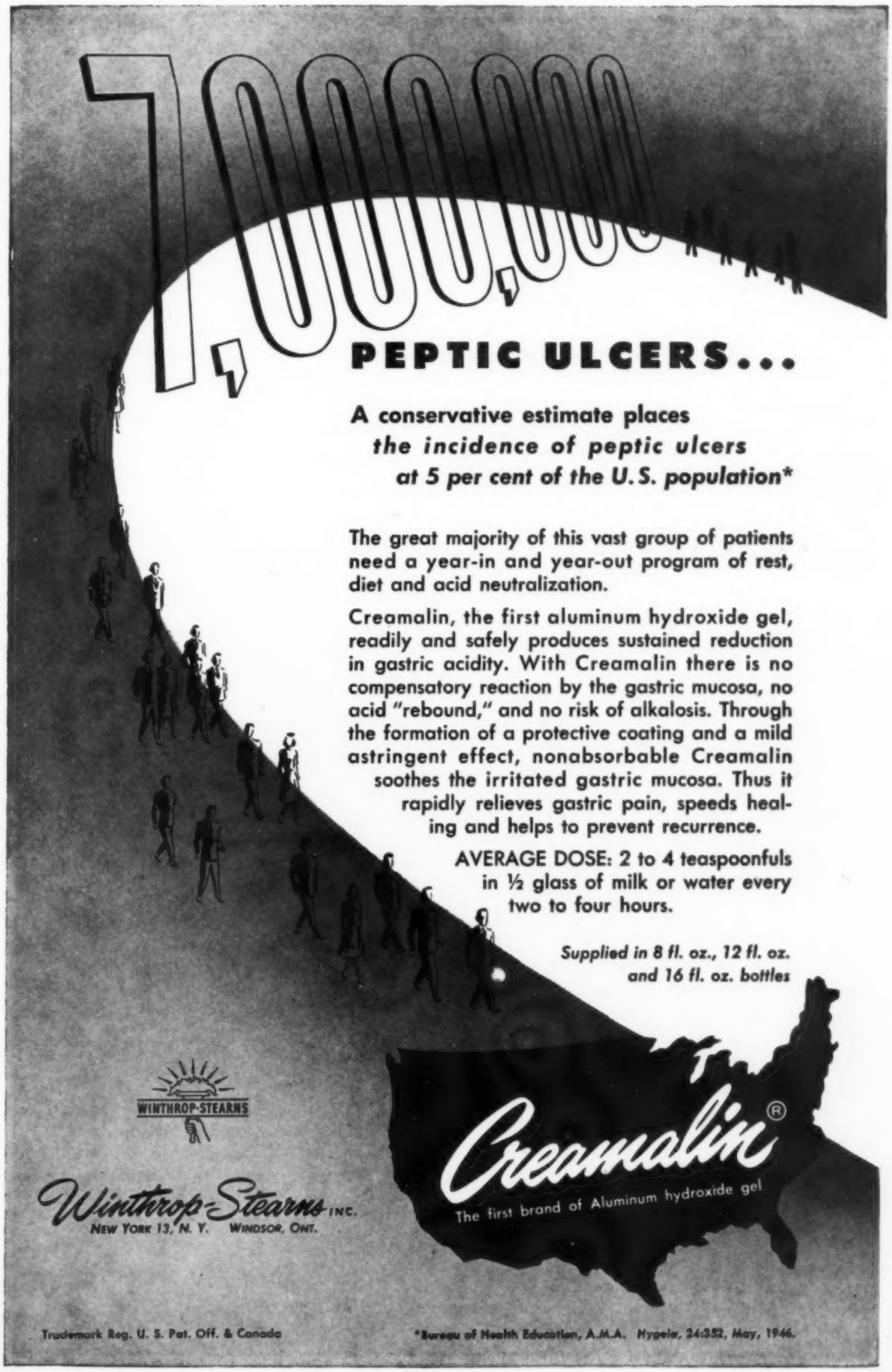
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The great majority of this vast group of patients need a year-in and year-out program of rest, diet and acid neutralization.
Creamalin, the first aluminum hydroxide gel, readily and safely produces sustained reduction in gastric acidity. With Creamalin there is no compensatory reaction by the gastric mucosa, no acid "rebound," and no risk of alkalosis. Through the formation of a protective coating and a mild astringent effect, nonabsorbable Creamalin soothes the irritated gastric mucosa. Thus it rapidly relieves gastric pain, speeds healing and helps to prevent recurrence.
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Supplied in 8 fl. oz., 12 fl. oz. and 16 fl. oz. bottles
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Creamalin®
The first brand of Aluminum hydroxide gel
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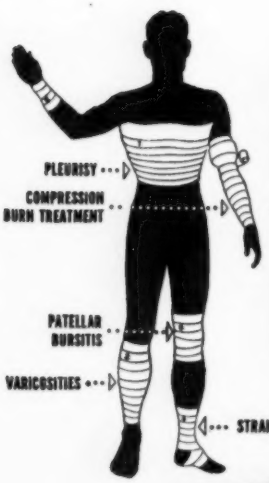
*Bureau of Health Education, A.M.A. Hygeia, 24:352, May, 1946.



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